

Fourmile Vegetation Management Project
Environmental Assessment
Forest, Oneida, and Vilas Counties, Wisconsin

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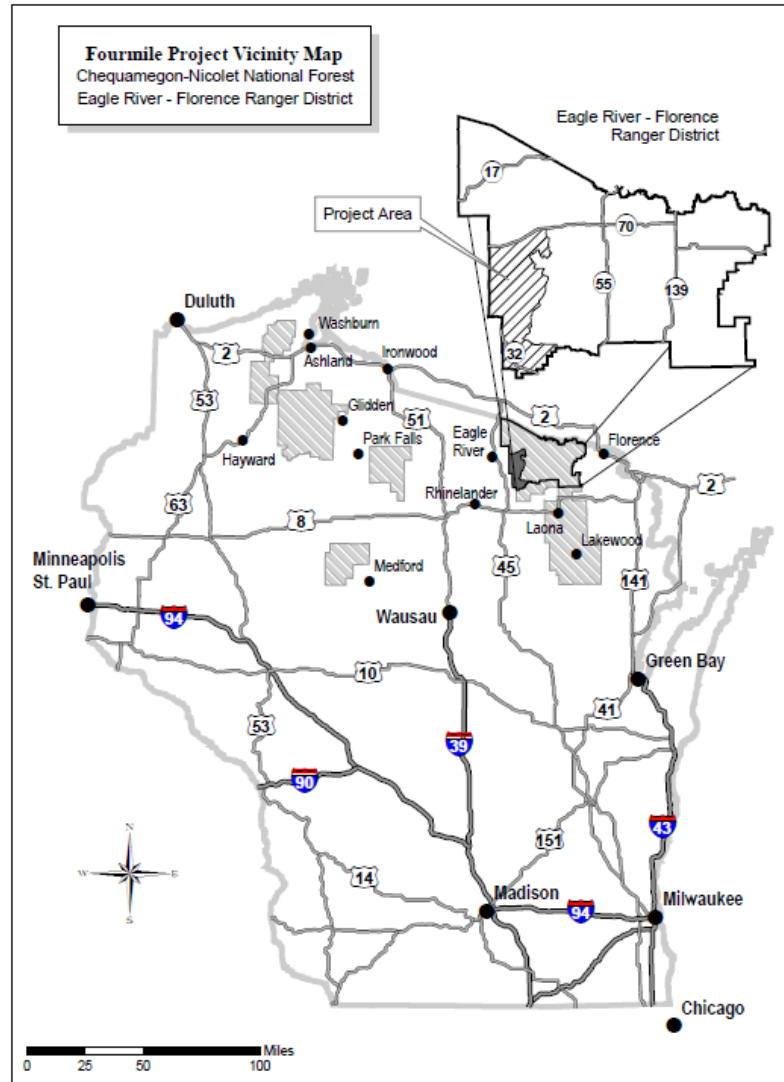


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Note: All appendices and maps are separate documents, spreadsheets, or pdfs to facilitate downloading of large files and different types of files.

Appendix A – Stand List with Activities

Appendix B – Direction for Activities Explained – Design Features & Criteria and Forest Plan Direction

Appendix C – 30 Day Comments and Responses

Appendix D – Purpose & Need

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1.0 CHAPTER 1 – PURPOSE AND NEED FOR ACTION

1.1 Introduction

The Eagle River-Florence Ranger District of the Chequamegon-Nicolet National Forest (referred to as the Forest) proposes to implement vegetation management activities collectively referred to as the Fourmile Vegetation Management project. The project is located in the southwest portion of the Eagle River-Florence Ranger District, in portions of Oneida, Vilas, and Forest Counties, Wisconsin.

This environmental analysis is conducted according to the Council on Environmental Quality's 1978 regulations for implementing the procedural provisions of the National Environmental Policy Act (40 CFR §§1500-1508, as amended). The CEQ issued revised regulations for implementing the procedural provisions of the National Environmental Policy Act, effective September 14, 2020. The revised regulations provide the responsible official the option of conducting an environmental analysis under the 1978 regulations if the process was initiated prior to September 14, 2020 (40 CFR §1506.13, 85 FR 137, p. 43373, July 16, 2020).

This Environmental Assessment (EA) package has been prepared with input from the 45-day Objection period and from the public provided during the 30-day Scoping period and the 30-day Notice and Comment period.

The purpose and need of the Fourmile Vegetation Management Project is to maintain and manage vegetation communities to their desired conditions as described in the 2004 Chequamegon-Nicolet Forest Land and Resource Management Plan (referred to as the Forest Plan). This project will also maintain or enhance existing forest research studies; contribute toward satisfying demand for wood products; provide a safe and effective road system; increase public safety related to wildfire potential; and maintain or enhance recreation experiences.

Two alternatives were analyzed in detail, including the No Action alternative (Alternative 1) and the Proposed Action alternative (Alternative 2). Under Alternative 1, the proposed actions would not be implemented, although ongoing projects and activities would continue. Alternative 2, the Proposed Action, meets the purpose and need with actions on around 11,700 acres of timber harvest- expected volume approximately 45.42 million board feet (MMBF), up to 577 acres of fuels reduction pertaining to wildfire probability and reforestation. Furthermore, the proposed action of Alternative 2 includes: 36.1 miles of hunting hiking trails maintenance, 134 acres of wildlife opening maintenance, 1.2 miles of new road construction, 0.2 mile temporary road construction, 46.4 miles of road reconstruction, 50.7 miles of unauthorized roads added to the National Forest Transportation System as closed to public motor vehicle use, 0.9 mile of unauthorized roads added to the system as open to public motor vehicle use and added to the MVUM (totaling 51.6 miles), 48.9 miles of road converted to trail, 147.2 miles of road decommissioning, and a possible 1.0 mile of National Forest System Road closure and removal from Motor Vehicle Use Map (MVUM), .

Summary effects analysis can be found in the subsequent chapters of this EA. In-depth analysis can be found in the specialist resource reports in the project record. This EA incorporates by reference the project record that contains technical resource reports prepared by resource specialists, in addition to other information such as maps, field notes, spreadsheets, and Geographical Information System (GIS) information. Relying upon the project record helps to implement the CEQ regulation provision that Federal agencies should reduce the paperwork related to National Environmental Policy Act (NEPA) process (40 CFR 1500.4).

This EA tiers to the broader, more detailed analysis of the Forest Plan and its Final Environmental Impact Statement (USDA Forest Service, 2004), hereafter referred to as the Forest Plan and its FEIS. This project EA discloses the direct, indirect, and cumulative impacts that would result from the proposed action and alternatives. The Forest Service has prepared this draft environmental assessment (EA) in compliance with the National Environmental Policy Act (NEPA) and its implementing regulations at 40 CFR Parts 1500-1508, and other relevant federal and state laws and regulations.

This document is available on the internet at: <https://www.fs.usda.gov/project/?project=51959>.

1.2 Project Area Description

The Fourmile Vegetation Management project area (hereafter referred to as the Fourmile project area or project area) lies within the southwest portion of the Eagle River-Florence Ranger District in portions of Oneida, Vilas, and Forest Counties. The activities are within legal description: T40N, R11E and R12E; T39N, R11E and R12E; and T38N, R11E and R12E. A general vicinity map is located after the cover page and before the table of contents in this environmental analysis. The project area encompasses more than 55,000 acres, of which roughly 44,000 acres are a part of the Chequamegon-Nicolet National Forest.

Forest Road (FR) 2178 (Military Road), FR 2183 (Scott Lake Road), and Highway 32 run through the project area. There are many other roads that wind through the project area as well, providing scenic drives and recreation opportunities. The forest composition in the project area is dominated by mixed hardwoods, aspen, and red pine with minor components of lowland conifer, like black spruce. Larger-sized lakes in the project area include Franklin, Lower Ninemile, Sevenmile, Big Fork, Julia, and Whitefish Lakes.

The Forest Plan establishes multiple-use goals and objectives, and assigns a Management Area (MA) to each block of forest, based on various combinations of Landscape Type Association, forest type, geographic boundaries (e.g. roads, rivers, land ownership boundaries), or political boundaries. The proposed actions for the Fourmile project area take place in five MAs: 2A; 2B; 4A; 4B; and 8A.

MA 2A: The direction for MA 2A (Uneven-aged Northern Hardwoods Forest) emphasizes large patches of uneven-aged hardwood forest that is maintained through selection cutting and creation of canopy gaps that occur at 10 to 20-year intervals. Pine and early-successional types are present and should be maintained with even-aged silviculture. Temporary open patches are small, somewhat uncommon, and normally do not break up large patches of northern hardwoods. Forest openings are generally allowed to revegetate, but a small number of openings are maintained as openings (Forest Plan at 3-7 through 3-8). Eleven percent of the project area's NFS (National Forest System) lands is in MA 2A.

MA 2B: (Uneven-aged Northern Hardwoods Interior Forest) features a similar forest structure and has the same desired conditions as MA 2A. However, this management area will have less aspen and pine, leading to more pure hardwood stands. Twelve percent of the project area's NFS lands is in MA 2B.

MA 4A: (Conifer: Red – White – Jack Pine) is dominated by conifer, but hardwood and aspen are well represented. These ecosystems are maintained by even-aged timber harvesting (thinning, shelterwood, and clearcutting harvests), site preparation, and prescribed fire. Young forests, small permanent openings, and mixed stands of pine-oak are commonly interspersed throughout the area (Forest Plan at 3-17 through 3-18). Seventeen percent of the project area (National Forest System lands) is in MA 4A.

MA 4B: (Conifer: Natural Pine-Oak) is dominated by natural origin red and white pine often mixed with oak. Early successional forest, such as aspen, is a minor component of the area. Timber harvest along with fire is used to regenerate pine and oak. Low intensity intermediate treatments such as thinning and prescribed fire are scheduled on a return interval of 10 to 20 years (Forest Plan at 3-18 through 3-19). Twenty-three percent of the project area's NFS lands is in MA 4B.

MA 8A: (Argonne Experimental Forest [AEF]) is one of only approximately 80 USDA Forest Service experimental lands. Relatively continuous mid to late successional northern hardwood and northern hardwood-hemlock forests dominate the southern and eastern portion of the Argonne Experimental Forest. Early successional types such as aspen, balsam fir, and jack/red pine dominate the northern and western portion of the area. Temporary openings resulting from research projects are generally small (5 to 40 acres) but may vary as projects expand to consider landscape level effects (Forest Plan at 3-36 through 3-38). Fourteen percent of the project area's NFS lands is in MA 8A.

There are proposed actions within this project area that are bordering, but not within, MA 8E (Research Natural Area [RNA]). All stands being proposed near RNAs or MA 8Es are aligned with the guidelines of MA 8E while meeting the Forest Plan guidelines of their respective management area (Forest Plan at 3-50 through 3-53).

Other MAs: The remaining twenty-three percent of NFS lands in the Fourmile project area consist of MAs 6A, 8D, 8E, 8F, and 8G. Since the proposed activities are not located in these areas, a description of these MAs will not be supplied here. However, for a detailed description of these MAs, see the Forest Plan at 3-30 through 3-32 and 3-42 through 3-59.

1.3 Purpose and Need for Action

The Forest is tasked with implementing land management activities consistent with direction in the Forest Plan and addressing major gaps between desired future conditions and the current conditions in the project area.

In early 2017, an interdisciplinary team comprised of District and Forest resource specialists began assessing the existing conditions and management options within the Fourmile project area. The purpose and need for this project was developed when these resource specialists identified the specific gaps between desired conditions (outlined in the Forest Plan) and ground conditions within the project area. In addition, a detailed roads analysis was completed in order to determine long-term access needs.

The proposed action (Alternative 2) was derived from these efforts, reflecting how the Forest Service could best close the gap between the desired and existing conditions, while meeting project objectives and eliminating or minimizing potential resource impacts. Alternative 2 actions and activities are described in Chapter 2 and in Appendices A, B, and E.

Vegetation management was identified as the main focus of this project. All of the vegetation needs identified by resource specialists are tied to Goal 1.4 of the Forest Plan: provide terrestrial ecosystems in healthy, diverse, and productive conditions that support the diversity of plant and animal communities and tree species, and have a high likelihood of supporting the viability of native and desired non-native vertebrates and vascular plants well distributed in their ranges within the planning area over time (Forest Plan at 1-3). The proposed project also includes transportation management, wildfire and fuels management, and management of hunter hiking trails and wildlife openings.

Through examination of the existing conditions in the project area, five major purposes and nine needs for action have been identified based upon Forest Plan goals and objectives and other Forest Service direction. To achieve those purposes, the Proposed Action would reduce stocking levels and maintain or enhance uneven-aged stand conditions. The proposal would also improve tree species diversity within stands, provide more data for long-term research projects, and make improvements to wildlife habitat, recreation assets, and the transportation system. Appendix D contain more details related to the purpose and the need for the project.

Purpose A. Maintain or restore vegetation communities to their desired conditions in Management Areas (MA) 2A, 2B, 4A, 4B, and 8A (Forest Plan Objective 1.4a).

- Need 1. Reduce stocking levels in overstocked forested stands within Management Area 2A, 2B, 4A, 4B, and 8A.
- Need 2. Maintain or move northern hardwood stands toward an uneven-aged condition consistent with Forest Plan direction while maintaining or enhancing within stand species diversity.
- Need 3. Improve age class distribution, moving stands toward Forest Plan desired conditions.
- Need 4. Improve tree species composition to more closely reflect Forest Plan desired conditions.
- Need 5. Maintain or enhance existing forest research studies (e.g. continue research studies in the Argonne Experimental Forest or develop new research studies) to address vegetation concerns.

Purpose B. Contribute toward satisfying demand for wood products and special forest products through environmentally responsible harvest on National Forest System lands (Forest Plan Objective 2.5).

- Need 6. Utilize commercial harvest as the preferred tool to achieve project objectives, contributing to the demand for forest products.

Purpose C. Need to provide a safe and effective road system (Forest Plan Goal 3.1).

- Need 7. Build and maintain safe, efficient, and effective infrastructure that supports public and administrative uses of National Forest System lands.

Purpose D. Increase public safety related to wildfire potential (Forest Plan Objective 2.8c).

- Need 8. Reduce hazardous fuels within communities at risk.

Purpose E. Maintain or enhance the diversity and quality of recreation experiences within acceptable limits of change to ecosystem stability and condition (Forest Plan Goal 2.1).

- Need 9. Maintain the Scott Creek, Kimball Creek, and Nine-Mile hunter hiking trails (HHT) and associated wildlife openings.

1.4 Decision Framework

This EA is not a decision document. An EA's main purpose is to disclose the potential impacts of implementing the proposed action and alternatives to that action so that the Responsible Official, the Eagle River-Florence District Ranger, can make an informed decision. Options include implementing the project as proposed through the selection of one of the alternatives (including the No Action alternative), or through a combination of analyzed alternatives. The Responsible Official will answer the following three questions:

1. Will the proposed action proceed as proposed, as modified by an alternative, or not at all?
2. What mitigation measures or project design criteria and monitoring requirements are needed?
3. Will the decision require a Forest Plan amendment?

1.5 Consultation and Public Involvement

Local tribes, concerned agencies, local governments, and the general public were consulted with or notified about this project during the early stages of project development. Opportunities to provide comments regarding this proposed project were provided through consultation letters, scoping packages, a

legal notice in the Newspaper of Record (*The Northwoods River News*, Rhinelander, WI), the Chequamegon-Nicolet National Forest quarterly Schedule of Proposed Actions (SOPA), and the Forest's web page (<https://www.fs.usda.gov/project/?project=51959>).

Communication will continue throughout the finalization of this analysis and a final project decision. Opportunities to provide comments regarding this proposed project were provided through the processes summarized below.

- Local tribal representatives were contacted on June 15, 2017.
- Public notification has been on the Forest's project web page since June 2017.
- This project has been listed in the CNNF Quarterly Schedule of Proposed Actions (SOPA) beginning with the September 2017 edition.
- On June 15, 2017, a scoping letter (including where additional project information could be found) was sent (hard copy or by e-mail) to 867 interested publics, adjacent landowners, organizations, and government agencies. 122 comments and responses were received during the scoping period (June 15 – July 17, 2017). Summaries of the comments and Forest Service responses to them are in the project record and were published in Appendix C of the 30-Day Notice and Comment Period EA.
- The 30-day Notice and Comment Period began May 29, 2019 the day after the date of publication of a legal notice in the newspaper of record, *The Northwoods River News*, of Rhinelander, WI. The legal notice announced the availability of this document and associated maps and tables and explained how to obtain additional information and provide comments. During the 30-day Notice and Comment period, 21 individuals/ families/organizations asked questions and commented on many different aspects of the proposed project. Summaries of the comments and Forest Service responses to them are in the project record and in Appendix C of this EA.
- State and Tribal heritage consultation packages for the Fourmile project area were produced and sent out by 03/23/2020. The 45-day review period for these packages overlapped with the objection period.
- The objection period began 03/23/2020*, which is the first business day after the date of publication of a legal notice in the newspaper of record, *The Northwoods River News*, of Rhinelander, WI. The legal notice announced the availability of the draft EA, associated maps and tables, and explained how to provide objections from qualifying commenters.
 - ❖ The objection period draft EA unintentionally listed 03/30/2020, due to this typo objections were also accepted within 45 days of this date.
- Two objections were received from previous commenters during the objection period. One of the objections was withdrawn. The remaining objection submitted by the Environmental Law and Policy Center (ELPC) prompted the routine regional review procedure of the Fourmile project on the topics ELPC was found to have standing on. The outcome of the review resulted in some required and some suggested changes to the Fourmile project from the regional review team to the Forest Supervisor. These results, and any associated actions taken by the ERFL office, can be found in Appendix J of the EA.

1.6 Issues and Concerns

Issues are those subjects directly or indirectly impacted by implementing the proposed action. They are used in the analyses to disclose effects, prescribe mitigation measures, or to formulate alternatives to the proposed action. The Council on Environmental Quality regulations require this delineation in Section 1501.7 "...identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Section 1506.3)..."

Appendix C includes comments received from the 30-day comment period, along with Forest Service responses to public comments and questions. Some comments were not identified as issues because they were: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decisions; 3) irrelevant to the decision to be made; 4) conjectural and not supported by scientific or factual evidence; or 5) the magnitude, extent, duration, speed, and/or direction of effects relating to the issue were considered to be insignificant.

The results of internal scoping, tribal consultation, and public involvement were reviewed by the interdisciplinary team and the Responsible Official; the following relevant issues were identified. For each issue, there is a description of how it relates to the proposed action (cause and effect relationship) and how it is measured in the analysis. More complete issue descriptions for each associated resource are provided in resource reports in the project record or in Chapter 3 of this EA.

- Threatened and Endangered Plant Species (TES), and Regional Forester Sensitive Plant Species (RFSS)
- Visuals or Scenic Integrity
- Tree Composition (species and age diversity)
- Non-native Invasive Species (NNIS)
- Fuels, Prescribed Burning

Additional public concerns surfaced around game species, general herbicide use, aspen management and clearcutting, early successional (wildlife species) management, road access management, road improvement, trail use changes, project purpose and need, quality loggers/implementation personnel, and implementation timeline. These topics were responded to in Appendix C, Response to Comments. In addition to the above issues, the following resource areas for analysis are addressed and can be found in Chapter 3 of this EA:

- Soil Productivity
- Water Quality
- Air Quality
- Transportation and Public Access
- Climate Change
- Cultural Resources

2.0 CHAPTER 2 – ALTERNATIVES

The purpose and need for action defines the range of alternatives since all alternatives must, in some way, meet the purpose and need. Alternatives to the proposed action are usually developed to address unresolved significant issues about effects identified during scoping. 36 CFR 220.7(b)(2) states that an EA shall briefly describe the proposed action and alternatives that meet the need for action. No specific number of alternatives are required or prescribed.

This chapter, along with Chapter 3, Affected Environment and Environmental Consequences, provides the basis for the Responsible Official and the public to compare alternatives. Chapter 2 describes the No Action Alternative (Alternative 1) and the action alternative (Alternative 2) that wholly or partially meets the purpose and need identified in Chapter 1. The formulation of alternatives complies with the implementing regulations of NEPA (36 CFR 220.7(b)(2)), which state that the EA shall briefly describe the proposed action and alternatives that meet the need for action and address an issue.

2.1 Alternative 1 – No Action

The No Action alternative is analyzed in order to provide a baseline of the environmental condition if no additional agency action is undertaken. This alternative does not respond to the purpose and need of addressing Forest Plan goals and objectives.

Under this alternative there would be no timber harvesting, fuel reduction, trail maintenance, or road decommissioning completed. However, current ongoing management and permitted uses would continue in the project area and across the District, including road maintenance, wildland fire suppression, and recreation facility maintenance. Public uses such as camping, firewood gathering, and hunting would also continue. The results of taking no action compared to the other alternative are displayed in the tables at the end of this chapter, and in the individual resource analysis sections of Chapter 3.

2.2 Alternative 2 – Proposed Action

This alternative was developed to maximize attainment of the purpose and need while meeting agency and Forest Plan requirements. Alternative 2 emphasizes moving the project area toward Forest Plan desired conditions.

Appendix A is a spreadsheet of proposed vegetation management treatments for each stand in Alternative 2. The amount of a particular activity outlined in Appendix A (acres), and the locations depicted on maps in Appendix I are approximate, based on inventory and survey estimates. The vegetation management table displays stand acres for each stand; these acres may be adjusted due to on-the-ground conditions at the time of implementation. Typically, the on-the-ground conditions will reduce the actual activity acres. In some cases, the implemented stand acres are less than the stand acres in order to protect water, fish, wildlife, plants, or because a particular portion of the stand does not lend itself to the proposed silvicultural treatment. The actual figures could change during preparation for a timber sale based on such things as avoidance of site-specific areas that are too small to show up at the scale of maps used for display, small inclusions of inoperable terrain, non-uniform stand structure, or slight refinements in the amount of road construction or reconstruction that may be needed.

Table EA-1 below shows the number of acres of various treatments for different tree species.

Table EA-1. Vegetation treatment acres by species

Treatment (acres)	Aspen	Balsam Fir	White Pine	Hardwood/Hemlock	Jack Pine	Red Oak	Paper Birch	Red Pine	White Spruce	Total
Removal	45	166	16	5	0	0	0	0	0	232
Clearcut/Coppice	1053	73	0	37	13	0	0	8	6	1190
Improvement	0	0	0	263	0	0	0	0	0	263
Selection	0	0	0	5130	0	39	0	0	0	5249
Shelterwood	0	0	42	0	17	84	253	6	0	403
Thin	186	11	407	43	11	98	139	2325	193*	3331
Restoration	25	0	0	0	4	4	0	147	0	181
Salvage/Sanitation	27	0	13	0	33	114	0	0	40	227
Pre-Commercial Thin	0	0	29	0	0	0	0	63	0	92
Experiments	0	0	0	526	0	0	0	0	0	526
Total	1336	250	507	5979	78	339	392	2549	239	11669

2.2.1 Variation of Forest Plan guideline for created openings greater than 40 acres

Alternative 2 includes a minor variation from a Forest Plan guideline (i.e. clearcutting over 40 acres). This variation would not require a Forest Plan amendment.

Specifically, there are eight aspen or mixed aspen, paper birch, and balsam fir stands that would be combined to create harvest units greater than 40 acres in size (see Table EA-2). These forest stands need harvest treatment to meet the purpose and need of this project. To ensure the Forest Service minimizes forest fragmentation (maintain forest connectivity) and still resolves the issue of forest resiliency in the Fourmile project area, it is necessary to create temporary openings that exceed 40 acres in certain areas. The Forest is allowed to create temporary openings greater than 40 acres after project level analysis, 60 days of public notice, and review and approval by the Regional Forester.

Table EA-2 below gives information about these 8 stands. These stands total 351 acres. 124 acres are in Management Area 2A, 49 acres in 4A, and 178 acres in 4B.

Table EA-2. Aspen units proposed for clearcut harvests greater than 40 acres.

Compartment	Stand	Acres	MA**	BA**	DBH**	Age
2189	14	49	4A	153	10	40
2211	5	124	2A	-	-	45
2219	13	102	4B	129	9	49
2218	20*	5	4B	133	10	52
	30*	27	4B	100	8	42
	31*	10	4B	127	10	57
	41*	26	4B	107	10	62
	35*	8	4B	160	10	42

* The 5 starred (*) stands in Compartment 2218 are adjacent to each other and would be combined into a single stand of 76 acres. Each of the unstarred stands would be its own harvest unit.

**MA = Management Area; BA = basal area; DBH = diameter at breast height

Deviating from the Forest Plan guidance of no clearcutting over 40 acres is being pursued to treat over mature aspen, increase forest health, and meet Forest Plan desired future conditions. This treatment would retain aspen populations at a level which is prescribed in the Forest Plan (i.e. lower amounts of

older, dying aspen, and increase younger aspen that is beneficial for many wildlife species like ruffed grouse and golden-winged warbler). For the Fourmile project, clearcutting these areas would meet the need to promote healthy aspen stands and aid in moving the project area's age class distribution toward Forest Plan desired conditions.

The effects of this Forest Plan guideline deviation are described in the vegetation section, Section 3.4 of this EA, under the analysis of Alternative 2. Also, throughout Chapter 3 of the EA the impacts to other resources like wildlife, soils, and recreation are outlined. More detail is contained in the resource reports found in the project record.

If the Forest Service were not able to deviate from this guideline, these large clearcuts would be subdivided by approximately 10-acre "leave areas" or aspen shelterwoods (underplanting white pine for regeneration). These leave areas would add up to an approximate 60 acres and increase forest fragmentation and edge habitat. More detail can be found in the Vegetation report in the project record.

The request to deviate from the Forest Plan was submitted to the USFS Region 9 regional office to the Regional Forester on January 29, 2020 and, after review, was approved on March 4, 2020.

2.2.2 Purpose and Need Connection to Proposed Action

The following actions were designed to move the project area toward desired conditions while meeting Forest Plan goals, objectives, standards, and guidelines.

The following table displays the proposed action items and what needs they achieve.

Table EA-4. *Proposed Action (Alternative 2) and What 'Need' They Achieve	
Need 1: Reduce stocking levels in overstocked forested stands	Acres
Hardwood Forests	6,004
Conifer Forests (thinned)	3,496
Paper Birch Forests (thinned)	139
Need 2: Maintain or move northern hardwoods toward an uneven-aged condition while maintaining or enhancing within stand species diversity	Acres
Selection/Improvement Harvest	5,433
Canopy Gaps Created	5,169
Need 3: Improve the age class distribution	Acres
Change Aspen Age Class	1,151
Change Oak Age Class	242
Change Birch Age Class	253
Change Conifer Age Class	645
Need 4: Improve tree species composition	Percent
Change in Aspen Forest	-4%
Change in Balsam Fir Forest	-1%
Change in Paper Birch Forest	-29%
Change in Jack Pine Forest	-1%
Change in Red/White Pine Forest	+4%
Change in Hardwood Forest	+4%
Change in Oak Forest	+5%
Change in Spruce Forest	-1%

Table EA-4. *Proposed Action (Alternative 2) and What ‘Need’ They Achieve	
Need 5: Initiate, maintain, or enhance forest research studies in the project area	Count
# of Studies Continuing	4
Need 6: Utilize Commercial Harvest as the Preferred Tool to Achieve Project Objectives	MMBF
Timber Volume Offered	45.42
Need 7: Build and maintain safe, efficient, and effective infrastructure that supports public and administrative uses of National Forest System lands	Miles
New Permanent Road Construction	1.2
New Temporary Road Construction	0.2
Road Reconstruction	46.4
Road Decommission	147.2
Road Conversion to Trail	48.9
Close to Public, Remove from MVUM	1.0
Add Road to System	51.6
Need 8: Reduce hazardous fuels within communities at risk	Acres
Ladder Fuel Reduction	229
Prescribed Burning for Regeneration or Restoration Purposes	334
Need 9: Maintain the Scott Creek, Kimball Creek, and Nine-mile Hunter Hiking Trails and Associated Wildlife Openings	
Trails Maintained	36.1 miles
Existing Openings Maintained	134 acres

* Definitions and descriptions of activities are contained in Appendix G – Glossary & Acronyms

See appropriate resource reports in the project record for more information about: road construction; road decommissioning; road closure; road reconstruction or maintenance; trail conversion; fuels reduction; maintenance of hunter hiking trails and wildlife openings; and research activities.

2.3 Relevant Laws, Regulations, Policies, Management Requirements

The Forest Service has prepared this EA in compliance with National Environmental Policy Act and its implementing regulations at 40 CFR Parts 1500-1508. 36 CFR 220.7 (c)(5) states that a Finding of No Significant Impacts (FONSI) will outline findings required by other laws and regulations applicable to the decision at the time of the decision. This project will comply with applicable laws, executive orders, policies, and regulations, including, but not limited to:

- National Forest Management Act
- Chequamegon-Nicolet National Forest Land and Resource Management Plan (Forest Plan), 2004.
- Wisconsin’s Forestry Best Management Practices for Water Quality (BMPs), 2010
- Endangered Species Act of 1973, as amended 1978, 1979, 1982, and 1988 (16 United States Code (U.S.C.) 1531)
- National Historic Preservation Act (16 U.S.C. 470)
- Clean Water Act, as amended 1977
- Wilderness Act

- Regional Forester Sensitive Species Policy
- Environmental Justice

For more information on the laws, regulations, and policies related to this project, see Appendix F – Compliance with Direction.

Applicable standards and guidelines from the Chequamegon-Nicolet Forest Plan are detailed in Appendix B, along with location or activity-specific design features and mitigation measures. These measures are part of the Proposed Action and would be implemented with Alternative 2 to further reduce or eliminate undesirable effects to soil, RFSS, the spread of non-native invasive plant species, and impacts to other resources.

2.4 Alternatives Eliminated from Detailed Analysis

The Responsible Official, along with the help of the interdisciplinary team, found that one issue raised by the public during the scoping period drove the Forest Service to look at an additional alternative to the initial proposed action. This issue included the concern around the impacts to Hidden Lake Trail and the visual resources in close proximity to the trail. The Responsible Official determined this issue did not warrant further analysis in the environmental analysis because this alternative would not fully meet the purpose and need, would negatively impact the trail system in the long term, and visual resources would already be mitigated with Forest Plan guidelines and project mitigations.

Comments made during the 30-day notice and comment period suggested consideration of 4 additional alternatives: an alternative that built no new roads; a Cohen Method alternative for reducing risk of home loss during wildfire; an alternative that changed all clearcut prescriptions to non-clearcut prescriptions; and an alternative that expanded the Purpose & Need to allow non-harvest alternatives. These alternatives are discussed below.

2.4.1 Hidden Lake Trail Alternative

The public suggested a 1-mile buffer of the Hidden Lake Trail in order to minimize the Fourmile project's impacts. Executing a 1 mile, no activity buffer around the Hidden Lake Trail would eliminate over 2,100 acres from the approximately 12,000 acre proposed action (approx. 17%). Those stands would no longer meet the project's purpose nor move stands toward Forest Plan desired conditions.

Managing the tree resources near the Hidden Lake Trail is a balance of short-term impacts and long-term benefits. The short-term, visual impacts of uneven-aged tree management (removing individual trees but keeping the canopy intact) would last less than 5 years, but the forest left behind would be more resistant to insects and diseases and be less prone to come down across the Hidden Lake Trail itself. Keeping the forests around the trail managed would create large, more aesthetically pleasing trees. This forest management would also improve safety and access and reduce maintenance by reducing the probability of trees dying and falling across the trail. The decision maker is willing to trade the short-term impacts in turn for the long-term, more sustainable, trail benefits. Lastly, the Forest Plan outlines direction that limits implementation activities to preserve visual resources for high Scenic Integrity Objectives (SIO) resources and activities that occur around them; the Hidden Lake Trail is one of these high SIO resources.

“

2.4.2 No New Roads Alternative

During the 30-day notice and comment period, one commenter stated “This guidance [from Shipley] should be used to deal with my request to develop a “no new roads” action alternative in detail. However,

this commenter did not request that we develop a “no new roads” action alternative for the Fourmile project.

The Fourmile project proposes only 1.2 miles of new permanent road construction are included in Alternative 2 (the Proposed Action), however there is a proposed net loss of 99.4 miles through various proposed road actions. Overall, the proposed road actions will lead to a reduction in the amount of open roads within the Fourmile project area. Further information on the proposed road actions can be found in Ch. 3 of the EA or in the Travel Analysis Report in the project record.

This alternative was dismissed from further consideration as the 1.2 miles of roads to be built are necessary for the proposed actions; the proposed action has an overall net loss of open roads within the project area.

2.4.3 Change All Clearcut Prescriptions to Non-Clearcut Prescriptions Alternative

To meet the Forest Plan objectives and desired conditions there is a need to improve the stand structure in even-aged and two-aged northern hardwoods and to maintain good stand structure in uneven-aged northern hardwoods while maintaining or enhancing within stand species diversity (Forest Plan, p. 2-6 to 2-8). In Management areas 2A, 2B, 4A, 8A, and 8D of the Fourmile Project area, there are about approximately 7,000 acres that have been identified as overstocked, in need of improved stand structure and suitable for timber production.

Further, there is a need to modify the project area’s age class distribution to more closely reflect Forest Plan desired future conditions. Currently, over 95% of Aspen are in age classes 21+ and only 4% in age class 0-10 conflicting with the Forest Plan desired age classes as there is an overabundance of older age and a shortage of youngest age classes in the project area. The age class distribution of aspen would be modified mainly by regenerating older stands into new young stands using the clearcut method as Aspen needs full sunlight for vigorous growth and successful competition with shade tolerant species. As little as 10-15 square feet of basal area of residual overstory would slow aspen sucker growth by 35-40% (Perala, 1977, p.3). Thus, shelterwood and seed tree harvests are not as effective in regenerating aspen stands. Individual tree selection is not effective in regenerating aspen stands since it maintains excessive shade-producing overstory trees.

Lastly, there is a need to modify the project area’s species composition to more closely reflect Forest Plan desired future conditions. Having a diverse forest on a landscape basis is important to keep up forest health and to maintain habitat for a variety of species. There is currently a lack of early successional forests in the Fourmile project area. By utilizing clearcuts in the overmatured aspen stands, early successional forests will be created in the clearcut areas which are projected to be regenerated with young aspen within 3-5 years.

Within the Forest Plan, it directs managers what percentage of each age class should be represented on the Forest, and species composition that should be represented across the forest for each management area. As many of our early successional species are at the end of their lifespan, without the use of clearcuts there is a risk of species lost before a natural disturbance may occur to regenerate an area. To allow our forest to be as healthy as possible we need to maintain as much diversity across the landscape as possible. If we do not clearcut we will lose a lot of our early successional species. Species such as Quaking Aspen, Big-tooth Aspen, Paper Birch, and Balsam Fir are fast growing, short lived species that inhabit sites after disturbances. Therefore, the optimum method for regenerating these species is short rotation clearcutting (Perala, 1990, p.561). Due to this, the requested alternative to avoid clearcutting was dismissed from further consideration. Further information about the silviculture reasoning and proposed treatments can be found in the Vegetation Report in the project record.

2.4.4 Expand the Purpose & Need to Allow Non-harvest Alternative

Alternative 1, the No Action Alternative, is an alternative without harvest. Forests that are not harvested do not stay the same. As forests age, many things change: age class distribution; density; size structure; species composition; and other factors that impact habitat for wildlife, plants, and humans. Any alternative with no harvest would not meet the purposes and needs of this proposed project.

No further consideration was given to a no harvest alternatives. An alternative of no harvest would not allow the forest to reach the desired conditions as listed in the 2004 Forest Plan.

2.4.5 Utilize the “Cohen Method” for Prescribed Burns

The request to utilize the research referenced (Cohen) is to remove fine fuels around homes to reduce the risk of wildfire. The Cohen method suggested is applicable to private lands and houses and was dismissed from further consideration as the USFS does not have jurisdiction on private land.

2.4.6 Red Pine Plantations – Potential Alternative Treatment

Many red pine plantations within this project area were planted by the Civilian Conservation Corp (CCC) to help reforest the landscape after the great cut over in the late 1800s and early 1900s but tend to grow poorly and be less resilient to insect and disease issues. Due to this issue, some red pine plantations were proposed for final harvest in the Fourmile project area. This change in prescription could have been applied to 1,327 acres of red pine stands within the project area. However, due to ranger direction, this alternative was dropped from further consideration following the objection review period.

2.5 Changes to the EA after 30-Day Comment Period

2.5.1 Reconstruction of FR 2432

Under Alternative 2, the entire length (5.16 miles) of FR 2432 (known locally as Backtracker Road) would be reconstructed or maintained.

The original Proposed Action, as portrayed on maps during scoping, did not propose any road work on FR2432. Maps “FourMile_E_Central.pdf” and Fourmile_NE_Central.pdf” showed FR2432 as “Open NFSR” (National Forest System Road) but did not indicated any work was proposed on it. Between the scoping period and the notice and comment period, the proposed activity designation was changed to “reconstruction”.

Harvest units are proposed along much of Backtracker Road. The purpose of the reconstruction is to improve a road that currently is not suitable for timber hauling along its entire length, and to put it into a condition so units planned along that road can be safely accessed by log trucks. The proposed action for FR 2432 has been updated to include the addition of 5 miles of reconstruction and all specialists have included that action in their analysis.

2.5.2 Unit deleted- near Franklin Lake sand bar used for public recreation

The area around the sand bar on Franklin Lake has been removed from the proposed action in response to concerns brought forth during public engagement.

2.5.3 Unit deleted - a white pine stand along Spring Meadow Creek

The stand in question was dropped after scoping due to the slope in the stand, lack of treatable area, and inability to access this stand in a way that would be cost effective and environmentally friendly. Slope within this stand varies from 15 to 35%.

2.5.4 Prescription Correction

During Scoping, the 99-acre aspen stand # 008-2 was incorrectly listed as having a clear cut prescription. The prescription has been corrected back to thinning on the most recent map (Appendix I) and in the table of stand information in Appendix A.

2.5.5 Herbicide Use

The herbicide use was dropped from the proposed actions after review by staff and by decision of the District Ranger.

2.5.6 Production of a Review of New Information (RONI)

The review was done to determine what, if any, impacts the July 2019 derecho with macroburst (“blowdown”) on the nearby Lakewood-Laona (LKLN) Ranger District might have on the proposed Fourmile project area and its resources. However, the blowdown itself did not occur in the actual project area nor in the Eagle River-Florence Ranger District.

When the blowdown occurred, most resource reports had already been completed or were near completion. The pre-decisional EA had already been provided to the public for the 30-day comment period. This RONI assessment of possible incidental impacts occurred after the 30-day comment period but before the Decision Notice or Objection Period. While no direct impacts occurred in the Eagle River-Florence Ranger District there may have been indirect or cumulative impacts on the Fourmile project area. In the spirit of transparency and taking a “hard look” at possible ancillary impacts, a Review of New Information (RONI) was completed for relevant resources. No adverse impacts were identified.

2.6 Changes to the EA after Objection Period

2.6.1 Removal of “Red Pine Plantations – Potential Alternative Treatment”

This alternative was dropped from further consideration based on the objection period review process and ranger direction.

2.6.2 Addition of Appendix J

Appendix J: Summary of Regional Review Identified Issues and Applicable Responses was added to the EA to address the required and suggested updates submitted by the regional review team to the Forest Supervisor. These were in response to an objection received by ELPC. The appendix is limited to the issues that ELPC was found to have standing on.

2.6.3 Biological Evaluation Updated

The Biological Evaluation/Biological Assessment (BE) was updated in response to the objection period review. Specific changes to the BE can be found utilizing Appendix J.

2.6.4 Aquatics Report Updated

The Aquatics Report was updated in response to the objection period review. Specific changes to the report can be found utilizing Appendix J.

2.6.5 Chapters 1, 2, and 3 of the EA updated

The EA was updated to reflect the changes made due to or suggested by the objection period review.

2.6.6 Appendix A Updated

Appendix A was updated to improve readability and to address concerns brought forth during the objection period review.

2.7 Monitoring

Monitoring is the process of collecting data and information. Monitoring and evaluation is required by the National Forest Management Act regulations (CFR 219) and therefore formal monitoring is typically conducted at the Forest level. Monitoring is not performed on every single activity, nor does it need to be in order to meet the statistical rigor of formal research (Forest Plan at 4-1). In addition to the legally-required monitoring items discussed in Table 4-1 of the Forest Plan, the following monitoring would occur either during or after implementation of the proposed project activities.

- Tree marking would be monitored by the forest check cruiser and/or the district silviculturist to ensure the intent of the prescriptions are implemented on the ground.
- The timber sale administrator would inspect the harvest operations to make sure the contract provisions, management requirements, and mitigation measures are followed.
- During project implementation, on-site inspections would be performed by sale administrators to ensure contract provisions to protect soil resources are enforced. Annual timber sale implementation and effectiveness reviews are routinely conducted by interdisciplinary teams on randomly selected sale units. Also, annual soil quality standards monitoring would be conducted by a soil scientist on randomly selected timber sales across the Forest.
- All planted areas would be surveyed (survival survey) to monitor the establishment of the planted seedlings. All naturally regenerated areas would receive stocking surveys to monitor the success of natural regeneration in aspen clearcuts and hardwood selection harvests. Stands adjacent to trout streams would be surveyed to determine whether the harvest activities and/or underplanting resulted in a reduction of aspen regeneration.
- During project implementation, proposed treatment areas (harvest, site preparation, and road construction) would be monitored by Forest Service personnel to ensure contract specifications and design measures are followed. Randomly selected treatment areas would be monitored post-harvest by the forest soil scientist as part of a forest-wide soil monitoring program, to evaluate whether ground conditions meet acceptable limits of change for measurable and observable soil properties. Annual timber sale implementation and effectiveness reviews, including effects to soils, are conducted across the Forest by interdisciplinary teams on randomly selected completed harvest units. Future reviews on the Eagle River-Florence District would most likely include treatment areas from the Fourmile project area.
- During harvest operations, stands would be monitored on a regular basis to ensure project design features are implemented and maintained.

3.0 CHAPTER 3 – AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter summarizes the affected environment, or existing condition, of specific environmental components within the Fourmile project area that may be affected by proposed actions. The existing condition combined with the description of activities of the no action alternative (Alternative 1) established the baseline conditions against which the decision-maker or Responsible Official and the public can compare the potential effects of Alternative 2.

This chapter discloses the environmental consequences of implementing the alternatives described in Chapter 2, focusing on the project objectives and issues. Environmental consequences are the “impacts” or “effects” to forest resources. The important or relevant effects are emphasized, while less important effects are described briefly. The level of detail to which each resource effect is discussed depends upon the character of the resource and the scale of analysis necessary to display the effects for the Responsible Official. Additional detail may be found in the project record.

The analyses contained in this EA are based upon the best available science available at the time of completion. Effects analyses and documentation were conducted by resource specialists (see Section 4). Their resource reports are summarized here and are available in their entirety in the project record.

3.1 Past, Present, and Reasonably Foreseeable Future Actions

This section describes relevant past, present, and reasonably foreseeable future actions as they relate to the Fourmile project area. Cumulative effects on a particular resource result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions that result in similar effects, regardless of what agency or person undertakes the other actions (40 CFR 1508.7 and 1508.8). The cumulative effects analysis builds upon the existing condition assessment by considering the incremental addition of direct and indirect effects of the proposed action as well as ongoing and reasonably foreseeable actions. If there are no additional effects from the Fourmile project, then there cannot be cumulative effects and each resources will state that if that is the case.

In the mid-1800s, northern Wisconsin forests were comprised of species such as maple, yellow birch, hemlock, white pine, fir, and cedar. Contrary to popular belief, the forests were not homogenous, expansive tracts of old growth forest; they included barrens, early successional forests of aspen and paper birch, and mature conifer and hardwood (Bourdo, 1983). Far more important to the land management history of the Fourmile project area was the logging era of the 1800s and the subsequent farming and grazing through the early 1900s. Following the extensive harvesting of the area that is now the Chequamegon-Nicolet National Forest, the federal government enacted an aggressive program to reforest its lands, mostly with pine species. As a result, the majority of the Forest is comprised of mature or nearly mature stands of trees. There has been a reduction in the amount of hemlock and cedar since pre-settlement times. Their poor regeneration may be attributed to the need for burned or scarified seed beds.

Using the Forest Service’s Forest Activities (FACTs) database, it was determined that almost 18,900 acres of harvesting has occurred in the project area since 1975. The known activities include approximately 6,300 acres of thinning, approximately 3,600 acres of clearcuts, approximately 3,300 acres of selection harvests, roughly 400 acres of removal harvests, and roughly 3,000 acres of improvement harvests. The rest of the acres were treated with shelterwood or salvage harvests. Very little harvesting has occurred in the last 10 years; before 2010, approximately 470 acres were harvested each year out of the project area.

In order to understand the contribution of past actions to the cumulative effects of the proposed action and alternatives, this analysis relies on current environmental conditions. This is because existing conditions reflect the aggregate impact of all prior human actions and natural events that have affected the environment and might contribute to cumulative effects. For example, past clearcut acres in aspen are reflected in the age classes displayed in Table EA-7. The other harvests have resulted in some of the current forest types and stand densities also displayed in that table's existing condition.

The Fourmile cumulative effects assessments follow CEQ direction using methodology described in Quinn, 2011. This methodology uses a catalog of past actions initially to define the affected area for cumulative effects, then focuses on quantitatively assessing the combined, present condition of a resource on which to add predictions of effects of the proposal and other foreseeable actions, regardless of ownership.

Reasonably foreseeable actions are those that had a developed proposed action as of April 2019 but would be implemented sometime after this analysis. Additional discussion of methodology on consideration of reasonably foreseeable actions is found in Quinn, 2011.

No additional vegetation management projects are planned for the reasonably foreseeable future within the Fourmile project area; however, as additional proposals become ripe for decision, they will be considered and combined in cumulative effects considerations. The 2004 Forest Plan programmatically considered the cumulative effects of future, yet not site-specifically defined actions.

The following table of past, present, and foreseeable actions (Table 3-1) is a project list that the resource specialists referred to during the drafting of their cumulative effects analyses. The pertinent projects and the added Fourmile impacts were then analyzed in their given resource sections of the resource reports in the project record.

Table EA-7. Past, present, and reasonably foreseeable Forest Service projects considered in the Fourmile project area

Project Names	Decision Year	Project Names	Decision Year
Eagle River-Florence District			
Morgan Lake	2017	Tipler North Fuels Reduction	2006
North Reservoir Salvage	2016	Spruce Decline II	2006
Grandma Lake Salvage	2016	Conifer Corner Thinning	2005
Phelps	2011	Argonne Old Growth Research	2005
Mister Burns II Salvage	2011	Chipmunk Thinning	2005
Grubhoe	2009	Creek Branch Thinning	2005
Jesse Spruce Salvage	2009	Fourmile Creek Thinning	2005
Tucker Salvage	2008	Pine Fork Thinning	2005
Fishel	2008	Schroeder Thinning	2005
Polecat Pine Thinning	2008	Chapel Pine Thinning	2005
Long Rail	2006	Flowage Thinning	2005
Northwest Howell	2006	Fourmile	Expected 2019
Lakewood-Laona District			
Spruce Decline I	2004	McCaslin	2003
Spruce Decline II	2006	Doubtfire Salvage	2014
Boulder	2007	Townsend	2018
Honey Creek Padus	2010	Quad County Salvage	2007
Lakewood Southeast	2013	Hardwood Biomass	2008
Lakewood-Laona Plantation II	2008	Flower Lake	2008
LKLN Early Successional	2019		
Great Divide District			
Black Torch	2018	Twentymile	2009
Cayuga	2009	Twin Ghost	2010
Pioneer Road Salvage	2014	Cheq. Red Pine Thinning	2016

Project Names	Decision Year	Project Names	Decision Year
Cheq. Salvage and Restoration	2015		
Medford-Park Falls District			
Camp Four	2009	Ice Age Blowdown	2011
Medford Aspen	2008	Chequamegon Red Pine	2016
Park Falls Hardwood	2012	2014 Red Pine Salvage	2014
Medford Aspen II	2017	Cheq. Salvage and Restoration	2015
Riley	2009	North Boundary Salvage	2016
Washburn			
Fishbone	2007	Greenwood	2019
Northwest Sands	2009	Red Pine Thinning	2011
Sunken Moose	2004	Twin Lakes Salvage and Restoration	2017
Cheq. Red Pine Thinning	2016		
Forest-wide			
Early Successional Habitat Improvement	2012		

Lands of Other Ownership

On the Eagle River-Florence District, there are approximately 248,835 acres of upland forest types. Within the approximately 55,000-acre Fourmile project area, approximately 24,300 acres are upland forest managed by the United States Forest Service, excluding water and urban areas that are not National Forest System lands. Almost half of the project area is owned privately. From the experience of the resource specialists, much of the private land in the Fourmile project area is recreational cabins. Comprehensive data on the private lands, including forest types, age structure, management history, and future plans are not reasonably available. Therefore, these lands were evaluated and categorized using aerial photo interpretation and remotely sensed data from 2005. The Forest digital landcover data on the lands of other ownerships was created using manual delineation and classification based primarily on 2005 NAIP imagery. The data created is a polygon feature class delineated through manual photo interpretation and assigned to one of 13 categories of landcover (St. Pierre, 2009). 2017 land management data from the Wisconsin DNR was also included in these data interpretations, verifying private and state vegetation management actions. More details about how this data was utilized in the environmental analysis is supplied in the resource sections throughout.

Habitat models used to estimate acres of suitable and unsuitable habitat for the various RFSS identified the amount of private lands in the various categories, but for analysis purposes, these acres were excluded from the models. Private lands were assumed to provide no suitable habitat, even though many parcels do. For this reason, the type of management on non-federal lands should not affect the total acres of suitable habitat within the cumulative effects area. It should be noted that even without including suitable habitat on other ownerships, habitat in the analysis area was not a limiting factor.

3.2 Threatened and Endangered Plant Species (TES), and Regional Forester Sensitive Plant Species (RFSS)

Issue: The proposed harvesting, site preparation, and road reconstruction and construction may decrease the viability of some plant TES and RFSS by temporarily reducing the amount of suitable habitat available to them.

This report analyzed how the proposed Fourmile Vegetation Management Project would affect RFSS plants. All RFSS plants were initially considered for this analysis, however detailed analysis were conducted for species confirmed or likely to occur in the project area and where there is potential to be impacted by the proposed action. Species analyzed in this report include Mingan moonwort (*Botrychium minganense*), little goblin moonwort (*B. mormo*), bluntlobe grapefern (*B. oneidense*), ternate grapefern (*B. rugulosum*), spreading woodfern (*Dryopteris expansa*), butternut (*Juglans cinerea*) and American ginseng (*Panax quinquefolius*).

Analyses differentiate between occupied habitat (direct effect) and unoccupied habitat (indirect effect). *Direct effects occur to individual plants or when occupied habitat is made unsuitable. An indirect effect occurs when suitable habitat is made unsuitable.* The analysis area for direct and indirect effects is the Fourmile project area. *Cumulative effects are the impacts that result from the incremental impact of the proposed action when added to past, present, or reasonably foreseeable future actions.* Cumulative effects are evaluated at hierarchical scales from the Fourmile project area up to the ER/FL RD and up to the Nicolet land base. The Forest Service developed habitat models based on habitat characteristics and conservation assessments to analyze impacts to RFSS plants. Effects on habitat suitability vary depending on the proposed treatment and resulting effects to canopy closure.

Mingan moonwort

There are no known occurrences of Mingan moonwort in the project area, therefore *no direct effects*. Occurrences of Mingan moonwort are probable within the project area. *Indirect effects:* a short-term reduction in suitable unoccupied habitat occurs at all scales that dissipates within five years. Undiscovered sites are at a higher risk of impact from mechanical disturbance in stands not harvested during frozen ground conditions. *Cumulative effects:* by 2028 there is a minute loss of total suitable habitat in the project area while the ERFL District has an overall increase (Table 29, BE). Determination: May adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing.

Little goblin moonwort

There are two occurrences of little goblin moonwort in the project area; one occurrence is adjacent to a stand proposed for treatment. Direct effects too little goblin moonwort would be minimized due to design features therefore *no direct effects*. *Indirect effects:* a short-term reduction in suitable unoccupied habitat occurs but dissipates within five years. Undiscovered sites are at a higher risk of impact from mechanical disturbance in stands not harvested during frozen ground conditions. *Cumulative effects:* by 2028 there is a minute loss of total suitable habitat in the project area while the ERFL District has an overall increase (Table 32, BE). Determination: May adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing

Bluntlobe grapefern

There are two occurrences of bluntlobe grapefern in the project area, one in a stand proposed for treatment. There are *no direct effects* to bluntlobe grapefern due to design features. *Indirect effects:* a short-term reduction in suitable unoccupied habitat occurs but dissipates within five years. Undiscovered sites are at a higher risk of impact from mechanical disturbance in stands not harvested during frozen ground conditions. *Cumulative effects:* by 2028 there is a minute loss of total suitable habitat in the project area while the ERFL District has an overall increase (Table 34, BE). Determination: May adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing.

Ternate grapefern

There is one occurrence of ternate grapefern in the project area adjacent to a stand proposed for treatment. Direct effects to the ternate grapefern and occupied habitat would be minimized due to the design features therefore *no direct or indirect effects*. As there are no direct nor indirect effects, there is no cumulative effects. Determination: No impact from project activities due to protection from project design features.

Spreading woodfern

There is one spreading woodfern in the project area in one stand that is not proposed for treatment. No project activities proposed within occupied habitat or suitable unoccupied habitat therefore *no direct or indirect effect*. As there are no direct nor indirect effects, there is no cumulative effects. Determination: No impact due to no project activities within occupied or suitable occupied habitat.

Butternut

There are no known occurrences of butternut in the project area, therefore *no direct effects*. Occurrences of butternut are probable within the project area. During implementation, Forest Plan guidelines will be followed protecting undiscovered trees and suitable unoccupied habitat, therefore *no indirect effects*. As there are no direct nor indirect effects, there is no cumulative effects. Determination: No impact from project activities due to protection from Forest Plan guidelines.

American ginseng

There are 18 American ginseng occurrences in the project area occurring in 11 stands, of which six are proposed for treatment. Although design features will be followed, there is a short-term *direct impact* to occupied habitat that dissipates within five years. *Indirect effects*: a short-term reduction in suitable unoccupied habitat occurs but dissipates within five years. Undiscovered sites are at a higher risk of impact from mechanical disturbance in stands not harvested during frozen ground conditions. *Cumulative effects*: by 2028 there is a minute loss of total suitable habitat in the project area while the ERFL District has an overall increase (Table 36, BE). Determination: May adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing.

Further information on impacts and project design features can be found in the Biological Evaluation (BE) in the project record.

3.3 Visuals or Scenic Integrity

Direct and Indirect Effects: Effects to recreation and scenic resources proposed within Alternative 2 of the Fourmile Project area are analyzed in this section. Alternative 2 was developed with the intent of restoring native vegetation communities while addressing wildlife habit improvement, watershed restoration, hazardous fuels reduction and timber production. These objectives were designed to be implemented in a manner that would minimize the possible effects on visuals resulting from harvesting and other vegetation management treatments in the project area.

Scenic integrity indicates the degree of intactness and wholeness of the landscape character (Landscape Aesthetics: A Handbook for Scenery Management, page 7). The effects from these activities would be

viewed as a change in in the degree of intactness of the landscape character observed by users after the harvest is complete. The greatest amount of noticeable change to scenic integrity would occur directly after harvest from logging debris, site preparation activities, and changes in vegetation composition and structure. After a period of time, vegetation management activities will create additional diversity in the treated stands including large, mature trees. One of the desired conditions for high quality scenery is diversity of species including large, mature trees.

The greatest amount of noticeable change to scenery would occur directly after harvest from logging debris, under burning, mechanical mastication and changes in vegetation composition and structure. After one year the harvesting activities would be complete and would no longer impact access to recreation sites.

Trails

Stands proposed for harvest along the *Hidden Lakes Trail* will primarily utilize a selection technique to minimize impacts to visuals. Though there are 15,026 feet of trail that are adjacent to proposed treatments, actual stand boundaries may decrease the amount of trail that is impacted during implementation. Total acreage of stands which lie directly adjacent to the Hidden Lakes Trail equals 562.6 acres. Some stands are large and extend a distance from the trail, at times out of the viewshed of the trail itself. The LRMP places a buffer on high SIO trails of 200 feet, in which management activities are to be designed to leave minimal evidence. Harvest activities proposed along the Hidden Lakes Trail, and within the 200 foot high SIO buffer, equals 138.77 acres. The Hidden Lakes trail is not maintained for recreational winter use so it is expected that minimal use is occurring during this time where ones recreation experience could be audibly or visually interrupted by operating equipment. In addition, harvest under frozen ground conditions will provide additional protection to the soil and desirable flora species along the trail corridor. Impacts to the visual quality of the surrounding landscape is expected during and immediately following harvest activities, but is expected to be short lived and no longer visible after one year.

Harvest in this area will remove over-mature, poor quality, and potentially hazardous trees which may pose a threat to users of the trail or the trail itself. In addition, individual tree selection will occur with respect to maintaining desirable understory flora species in stands 220001, 222001, and 224017. A resilient forest, comprised of desirable, long lived species will remain and in turn reduce required maintenance activities due to trees or limbs which have fallen across the trail. Additional signing will also be used along the Hidden Lakes Trail to inform visitors of treatment activities and to provide additional safety measures.

Selection and thinning harvest techniques will be used to maintain scenic character and minimize impacts to visual quality along the *Nicolet North Ski Trail and the Sam Campbell Memorial Trail*, with the exception of stand 180015. This stand, comprised primarily of Jack Pine, will be harvested through a Shelterwood technique, but designed to retain existing long lived species present within the stand. Following harvest, any slash remaining on site will be masticated through mechanical means to improve the visual quality along the trail and underplanted to aid in regeneration of the forest. Though there are 7,620 and 5,277 feet of trail that are adjacent to proposed treatments on the Nicolet North and Sam Campbell Trail, respectively, actual stand boundaries may decrease the amount of trail that is impacted during implementation. Total acreage of stands which lie directly adjacent to both trails equals 301.87 acres. Some stands are large and extend a distance from the trail, at times out of the viewshed of the trail itself. The LRMP places a buffer on high SIO trails of 200 feet, in which management activities are to be designed to leave minimal evidence. Harvest activities proposed along these trails, and within the 200 foot high SIO buffer, equals 113.65 acres. Harvest in this area will remove over-mature, poor quality, and

potentially hazardous trees which may pose a threat to users of the trails or the trails themselves. A resilient forest, comprised of desirable, long lived species will remain and in turn reduce required maintenance activities due to trees or limbs which have fallen across the trails. Additional signing will also be used along these trails to inform visitors of treatment activities and to provide additional safety measures.

Recreation Sites

Selection and thinning harvesting techniques will be used to maintain scenic character and minimize impact to visual quality near developed recreation sites. One exception is stand 180015, which is adjacent to the Sam Campbell Memorial Trailhead, and coincident with the Sam Campbell Memorial Trail (discussed above), is comprised primarily of Jack Pine and is to be treated through the use of a Shelterwood technique. Again, this harvest will be designed to retain existing long lived species present within the stand. Following harvest, any slash remaining on site will be masticated through mechanical means and underplanted to improve the scenic quality along the trail and near the trailhead. Selection and thinning harvests adjacent to recreation facilities will be conducted in a manner to promote a diverse, long lived, forest with large diameter trees to maintain visual quality and scenic integrity.

Stands 002012 and 015001, adjacent to Anvil Trailhead #2 and Nicolet North Trailhead #2 respectively, are proposed for harvest. These stands are separated from the trailheads by high SIO roadways. Anvil Trailhead #2 lies on the eastern side of Military Road while the harvest stand lies on the west and Nicolet North #2 lies on the western side of Babcock Road while the harvest stand lies on the east side of Babcock Road. Selection harvest in both of these stands will minimize impacts to visual quality and maintain scenic integrity near these trailheads and along the two roadways.

Stands 220001 and 224017, which surround the Hidden Lakes Trailhead will be harvested through an individual tree selection technique designed to maintain the desirable understory flora species. Selection harvest in both of these stands will minimize impacts to visual quality near this trailhead.

The Bailey Lake Equestrian Trailhead lies entirely within stand 208011, a Red Pine stand, which is proposed for thinning. This stand currently has an unnatural appearance as its planted rows are readily identifiable. Harvest will be designed to result in a more natural appearing stand of randomized trees. Appropriate measures will be taken to ensure minimal evidence of harvest activity.

It is not expected this project will impact scenic character or visual quality at developed campgrounds within the project area as there are no harvest activities planned directly adjacent to any of the campgrounds. However, all campgrounds are accessed by high SIO roadways where appropriate measures will be taken to maintain visual quality as discussed below. Many of the proposed harvest activities will take place during times of low use which will minimize the amount of disturbance to recreation users.

High SIO Lakes and Rivers

Stands above lie directly adjacent to high Scenic Integrity Objective (SIO) waterbodies. Impacts to users of the waterbodies is expected to be minimal. State of Wisconsin Best Management Practices restrict harvest activities near waterbodies to ensure protection of the resource. Harvest design will be in a manner to limit effects to scenic integrity from water users. Appropriate buffers will be maintained to protect visual quality in stands 177014, 177028, 198039 and 190013. Stand 188001, a salvage harvest, will remove all material from 22.14 acres. This stand is over-mature aspen, many with broken tops, with dead and/or dying birch in the understory. Harvest of this stand will result in a time period of reduced visual quality and scenic integrity, however it is expected that regeneration will produce a natural appearance within 10 years.

High SIO Roads

Wisconsin State Trunk Highway's 32 and 70 are also within the Fourmile Project Area. These two corridors are heavily traveled by the recreating public and local residents. Due to the high speed maintained by vehicles traveling these corridor's, temporary openings of no more than 130 feet are allowable, every 500 feet, but should not occupy more than 400 feet of each mile of roadway. The amount of opening that can be seen from the road will be limited to less than 5 acres. Limiting the visible opening would minimize the impacts to scenery along these roads. In limited circumstances a harvesting technique may result in a temporary opening greater than 130 feet in length, more than 400 feet per mile, and create a visible opening of more than 5 acres from the roadway. Stands 007007, 016006, and 188001 fall within this category as the first two, situated along State Trunk Highway 70, propose a salvage harvest which would result in a continuous temporary opening of 1,100 feet and an opening size of 17.5 acres. Additionally, the proposed salvage harvest in stand 188001, along State Trunk Highway 32, would create a continuous temporary opening of 1,165 feet and an opening size of 22.14 acres. However, since the stands are 76, 86, and 87 years old, respectively, they are already showing signs of high mortality and will become temporary openings on their own in the near future. Appropriate buffers will be maintained to protect visual quality in stands 001001 and 002001.

Within the Fourmile Project Area, roads such as Military Road, Old Military Road, Butternut Lake Road, Knaap Road, Haymeadow Road, Sheltered Valley Road, Scott Lake Road and Divide Road are used by the recreating public for travel to and from recreation sites, and for driving for pleasure recreational opportunities, as well as by homeowners who travel the roads to access their residence or seasonal homes. Harvest stands along these road corridors would be designed to minimize the evidence of forest management activities by limiting temporary openings a minimum distance of 200 feet from the roads edge. Selective harvesting techniques may still be used within 200 feet of the roads edge, however the harvest would be designed to minimize the evidence of forest management. In limited circumstances a harvesting technique may result in a temporary opening within the 200 foot buffer, however this will only be the case when mitigating safety concerns or the stands health and/or natural life cycle is at a point which would result in a natural opening on the landscape. Stands 178021, 207023, and 181026 fall within this category as the first two of these stands are designated as salvage harvest to remove dead or dying timber and the third stand is a relatively small (5.78 acre), 89 year old stand of balsam fir, all three stands will become temporary openings on their own in the near future. It is expected the above six openings will be visible for a period of about 10 years, or until the regeneration averages more than 12 feet in height or crown closure is more than 20 percent. Appropriate buffers will be maintained to protect visual quality in stands 181035, 181026, 218035, 186016, 208015, 216023, 211005, and 212018.

All other stands proposed for harvest immediately adjacent to High SIO corridors are scheduled for harvest techniques considered un-even aged or natural appearing and will be designed to minimize impacts to visual quality and maintain scenic integrity while promoting long lived, desirable tree species. The effects of harvest within these stands are expected to be noticeable for one year following treatment. After one year slash will have settled and the understory will have returned, providing a natural forested landscape.

Cumulative Effects: The analysis of cumulative effects includes lands on all ownership within the Fourmile Project Area. The vegetation report in the project record contains the past, present, and reasonably foreseeable future actions in or adjacent to the Fourmile Project Area. Harvest could occur on other ownership within the Fourmile Project Area. The Bureau of Commissioners of Public Lands, has land both within and adjacent to the project area that are proposed for harvest. Harvest on other public or privately owned land could have similar impacts to recreation including scenic impacts and dual use.

Management activities associated with Alternative 2 have the potential to combine with completed past projects, current projects, or foreseeable future projects. In the short-term, visitors traveling in the project area would observe an increase in temporary openings and a loss of mature vegetation. Over the longer-term, visitors would see a greater amount of younger trees in the analysis area as the harvested stands begin to re-vegetate and these younger age classes would be found in larger patches of forest. A long-range effect of the project would be an increase in the amount of vigorous trees in the Fourmile Project Area along with a reduction in over-mature, dying trees. This will lead to an increase in the aesthetic quality of the Fourmile Project Area as over-mature trees are replaced with healthier and more vigorous long-lived species.

Because of the mitigation measures incorporated into the prescription for stands within the Fourmile Project Area, impacts to scenic resources from management of federal lands, added to the impacts from development of private lands, is not expected to change the scenic character of the trails, recreation sites, waterbodies and roads, and will lead to an increase in aesthetic quality through the project area. In the first ten years post-treatment, openings in the forest created by management activity would be noticeable. Beyond ten years, these openings would re-vegetate through natural processes or by intentional planting and reseedling. Management of these stands may continue within or beyond ten years to release the longer lived species as they become established.

Wilderness Areas

There are no wilderness or roadless areas within the project area; however, the Blackjack Springs Wilderness borders the northern boundary of the project area and the Headwaters Wilderness borders the eastern boundary of the project area.

Blackjack Springs Wilderness

The Blackjack Springs Wilderness is relatively small in that it is less than 6,000 acres in size. It is bordered by homes along the southeastern and southwestern boundary, in addition to well-traveled roads on three sides, including 1.5 miles of State Trunk Highway 70, a highway which has an annual average daily traffic count of 1,900 vehicles. According to the 1991 Blackjack Springs Wilderness Implementation Schedule, most of this area was disturbed by logging and fire in the early 1900's and logging in the 1960's. Roads, plantations, and timber harvesting disqualified the area from consideration in the Roadless Area Review and Evaluation (RARE II).

There are no harvest activities proposed immediately adjacent to the boundary of Blackjack Springs Wilderness, however there are stands proposed for harvest south of STH 70, which borders the wilderness. The boundary for Blackjack Wilderness in all areas where a road is involved is described as 33 feet from the centerline of that roadway. In this instance, STH 70 has been relocated to the south from the roadways original location, the location which the boundary was derived. This results in a greater distance from the wilderness boundary to the existing roadway centerline of today and thus, proposed harvest activities.

Headwaters Wilderness

The Headwaters Wilderness, although larger than Blackjack Springs, is still relatively small at just over 22,000 acres, as the average size of the 765 wilderness areas in the United States is 142,000 acres. Its west central boundary is bordered by approximately 1.5 miles of general forest area, and the remainder is bordered by 25.5 miles of well travel roads, 23.3 miles of which is open to all-terrain and utility-terrain vehicle use. The Headwaters Wilderness is also trisected by two well-traveled roads, totaling 11.2 miles, resulting in three individual units, Shelp Lake Unit, Kimball Creek Unit and the Headwaters of the Pine

Unit. Of these two roads, Scott Lake Road, 6.10 miles in length, allows the use of all-terrain and utility-terrain vehicles in addition to travel by full sized vehicles and recreational motorcycles. According to the 1991 Headwaters Wilderness Implementation Schedule, most of this area was disturbed by logging and fire in the late 1800's and early 1900's. Portions of abandoned railroad grades and logging roads are visible, and remnants of a developed recreation area are evident.

There are five stands with proposed harvest activities immediately adjacent to the boundary of Headwaters Wilderness, in addition to stands proposed for harvest bordering roads which form the boundary of the wilderness area. The boundary for Headwaters Wilderness in all areas where a road is involved is described as 100 feet from the centerline of that roadway. This distance, in addition to the additional 25 feet of right-of-way extending from the centerline of each bordering roadway, results in a distance of 125 feet from the wilderness boundary to the nearest potential harvest activity. In most areas, 75 of the 125 feet (between wilderness boundary and edge of road right-of-way), is dense forest which provides a visual screen of the roadway and potential harvest activities from the wilderness.

The five stands which are located immediately adjacent to the boundary of Headwaters Wilderness are 207019, 207023, 198047, 198046, and 198045, totaling 54.42 acres and bordering the wilderness for 3,266 feet. Two of these stands 207023 and 198047 are proposed to be cleared. Of these two stands, the first is a planned salvage harvest of declining balsam fir, the second is a clear-cut to regenerate an aspen stand. Clearing adjacent to the wilderness boundary in the area of these two stands would total 1,113 feet. It is expected these harvests will be visible for a period of about 10 years, or until the regeneration averages more than 12 feet in height or crown closure is more than 20 percent. There is no direction in the Forest Plan regarding activities adjacent to wilderness boundaries.

All other harvest activities are buffered by roadways, such as State Trunk Highway 70 which separates the Fourmile project area from Blackjack Springs Wilderness and FR 2176 (Divide Road), FR 2183 (Scott Lake Road) which buffer the Headwaters Wilderness area from the project area. All roads which act as boundaries of wilderness areas are already considered high SIO roads and stands which are proposed for even-aged treatments are referenced above in table REC-6. All other stands proposed for harvest immediately adjacent to high SIO corridors are scheduled for harvest techniques considered uneven aged or natural appearing and will be designed to minimize impacts to visual quality and maintain scenic integrity while promoting long lived, desirable tree species. The effects of harvest within these stands are expected to be noticeable for one year following treatment. After one year slash will have settled and the understory will have returned, providing a natural forested landscape.

Due to this distance from the wilderness boundaries, existing vegetative screening, and existing transportation infrastructure, visual impact in areas where the wilderness is delineated by a roadway, is expected to be minimal.

Noise from harvest activities may impact users of the Blackjack and Headwaters Wilderness areas. However, this noise would be of a shorter duration than that coming from firewood cutters, which can occur almost year-round and in any location surrounding the wilderness areas. In addition, average annual daily traffic counts on STH 70 in this area total 1,900 vehicles per day and traffic on Divide Road and Scott Lake Road is estimated at 35 vehicles per day, this traffic count does not include use by all-terrain and utility terrain vehicles which are more prevalent on the weekends, a time users of wilderness are most likely to be in the area.

The Whisker Lake Wilderness is also located on the Eagle River/Florence Ranger District, however, its closest boundary is 22.3 miles from the Fourmile project area, and the Sylvania Wilderness, Ottawa National Forest, lies 17.3 miles northwest from the northwestern corner of the Fourmile project area. There is much development in-between, including the towns of Eagle River, Conover and Land O' Lakes, as well as, State Trunk Highways 70, 17 and 45.

3.4 Tree Composition (Species and Age Diversity)

This section of the EA is a summary of the Forest Vegetation Resource Report. The Fourmile Proposed Action has the potential to modify the composition and structure of upland forest vegetation. For more detail about the vegetation management activities proposed, see the Vegetation Resource Report in the project record. The report also discusses what effects the proposals would have on the upland vegetation within the project area now and in the future, specifically the effects on forest composition and structure. The report compares the anticipated changes in vegetation to the desired conditions given in the Chequamegon-Nicolet Forest Plan. It also identifies which alternative actions best respond to the Fourmile project's purpose of and need for action.

The actions of timber harvests and planting are the key actions that would result in measurable effects to forest vegetation. Other related actions, such as site preparation, prescribed burning, and hand release of seedlings also affect forest vegetation, but in less measurable ways. All of these actions are considered in the Vegetation Resource Report and the results are discussed in the context of the Forest Plan DFCs.

In preparing this analysis, the existing condition of the vegetation within the Fourmile Project Area was summarized and all expected changes were identified, by alternative. These changes were added to or subtracted from the existing condition to arrive at the expected results. The results were displayed in the context of Forest Plan Management Area direction at the project, area, and Forest levels. With this information, it displayed which actions moved the area in the proper management direction, and to what degree. Past, current ongoing, and planned future activities and their potential impacts of management were considered to determine cumulative impacts.

A summary of direct impacts are as follows:

- Alternative 2 used selection harvest and improvement harvests in northern hardwood to convert 5,433 acres to two-aged and uneven-aged stands.
- Alternative 2 converted many acres of the Fourmile project area forest types to more closely reflect Forest Plan guidance.
- Alternative 2 reduces the stocking levels 9,639 acres of overstocked (by means of commercial thinning, selection cuts, and improvement cuts) stands within Fourmile project area on.
- Alternative 2 would adjust 2,291 acres of overmature stands to a younger cohort which more closely reflects Forest Plan guidelines.

Deviation from Forest Plan: Alternative 2 proposes several clearcuts which are greater than 40 acres in size, which deviates from the Forest Plan. To deviate from the Forest Plan, permission from the USFS Regional Office, located in Milwaukee, WI, was obtained after the Eagle River-Florence Ranger District submitted a petition and supporting documents in February 2020. This use of this treatment would move the aspen populations towards the desired conditions described in the Forest Plan (lower amounts of older dying aspen, more of the younger aspen that is good for so many wildlife species). If we do not clearcut we will lose much of our early successional species such as: Quaking Aspen, Big-tooth Aspen, Paper Birch, and Balsam Fir which are all fast growing, short lived species that inhabit sites after disturbances.

Cumulative Effects: When looking at cumulative effects, actions of other districts on the forest must be considered when dealing with forest type. This is due to the Forest Plan dictating what percentages each forest type should be within each management area based on forest not on district level. To accomplish this task only forest types that had changes in each management area were looked at. If within a management area a forest type was not changed then there is no potential for cumulative effects. If the action alternative is chosen changes to the forest type distribution would be changed as shown earlier in tables (7,8, 9,10,11, 12, 13, 14, and 18, Vegetation Report). Only impacted Forest types are shown in the

table every other type that is not shown had no change on a percentage basis within the Fourmile Project Area and was therefore not considered into cumulative effects.

There are no cumulative impacts based on age since age is only analyzed on a project level basis only leading to direct impacts.

Further information can be found above in 2.2.1 of this EA and in the Vegetation Report in the project record.

3.5 Non-native Invasive Plants (NNIP)

This section analyzed how the proposed actions and connected actions in the Fourmile Vegetation Management project would affect the introduction, establishment, spread, and persistence of Non-Native Invasive Plant (NNIP) species. Direct effects are measured by the proximity of proposed activities to NNIP infestations (within ¼ mile) and travel through infestations. Indirect effects are measured by soil disturbance (acres) and light availability (acres) resulting from the proposed activities. The analysis area for direct and indirect effects is the Fourmile project area. Cumulative effects are measured by the amount and/or percent of soil disturbance (acres), light availability (acres) and net change in roads (miles) from the proposed activities in conjunction with other past, present, and reasonably foreseeable projects that overlap at a given scale. The scale used to analyze and compare cumulative effects are the Fourmile project area and the Eagle River-Florence Ranger District.

Direct Effects: Direct effects are defined as the risk of expansion and dispersal of current NNIP infestations within the project area as a result of project activities. And will be measured by the proximity of known infestations (within ¼ mile) to proposed activities and the amount of travel.

There are a total of 173 stands totaling 6,290 acres (53.8% of proposed stands) in Alternative 2 infested with NNIP (see Table 5, NNIP). There may be several occurrences of a single species or multiple species within a stand, see Appendix B and C for infestations within stands and stands within ¼ mile of infestations. Excluding the stands with winter only harvest restrictions, there are 140 stands totaling 4,452 acres (38.1% of proposed stands) that have an elevated risk of NNIP spread due to potential movement of logging equipment and machinery through NNIP infestations. There are an additional 241 stands totaling 4,112 acres (35.2% of proposed stands) proposed for treatment in Alternative 2 within ¼ mile of known NNIP infestations (see Table 5, NNIP). Excluding the stands with winter only harvest restrictions, there are 210 stands totaling 3,289 acres (28.1% of proposed stands) that have an elevated risk of NNIP introduction from propagule transport by logging equipment or machinery from nearby infested stands or from infestations along road corridors.

There are a total of 416.9 miles of existing roads in the Fourmile project area. The potential for introduction and establishment of NNIP propagules is significant on any open road. The Fourmile project proposes to build 1.4 miles of new roads, which will be closed following project implementation. In addition, 147.2 miles of existing roads are proposed to be decommissioned reducing the net mileage of roads in the project area by 145.8 miles. Decommissioned roads are permanently removed from the transportation system and are allowed to return normal ecological functions. Decommissioning efforts may include reestablishing drainage patterns, scarifying roadbeds, planting native vegetation, re-contouring back to pre-road status, or may be as little as placing an earthen berm and allowing to revegetate naturally. Closed roads are removed from the motor vehicle use map (MVUM) but retained for intermittent access for management activities. Not all roads proposed for closure will be physically closed. Infestations on roads proposed for decommissioning and those on closed roads that are physically closed would be slower to spread to adjacent roads due to the lack of vehicle traffic.

To avoid transporting NNIP propagules, machinery and equipment must be clean when entering non-infested areas. Machinery and equipment will avoid travel through documented NNIP infestations during implementation. Depending on the species and extent of an infestation, infestations may be flagged.

Exceptions may be made in extraordinary circumstances, such as when an NNIP infestation may be so severe that it may encompass an entire stand or travel route in an area required for project implementation. These scenarios will be evaluated by the District Botanist/Ecologist on a case by case basis. However, moving machinery and equipment that has operated in an infested area to an un-infested area is prohibited; the equipment must be cleaned before moving to NNIP free area.

Indirect Effects: Indirect effects are defined as the likelihood that habitat becomes more suitable for the establishment and/or persistence of NNIP as a result of project actions. And will be measured by effects of proposed activities on habitat suitability, the area of altered canopy closure, and the area of soil disturbance.

As seen in Table 2 (NNIP), Alternative 2 proposes to treat 5,285 acres in 173 stands that would have a negligible canopy effect, 4,173 acres in 202 stands that would have a short-term canopy effect (\leq five years), and 2,237 acres in 135 stands that would have a long-term canopy effect (\geq 50 years). Negligible canopy effects result in a slight risk of establishment and persistence of shade intolerant species and sustained risk of establishment, persistence, and spread of shade tolerant species. Short-term canopy reductions result in increased risk of establishment and persistence of shade intolerant, shade tolerant, and habitat generalist species. Long-term canopy reductions result in a high risk of establishment and persistence of shade intolerant species. As stands recover and canopy closure approaches 80%, established shade intolerant NNIP will recede and the risk of establishment, persistence, and spread diminishes.

As seen in Table 3 (NNIP), proposed treatments in Alternative 2 would result in 1551 acres of soil disturbance. An additional 89 acres of soil disturbance would result from proposed road activities in Alternative 2, as seen in Table 4 (NNIP). The total soil disturbance caused by proposed treatments and road activities in Alternative 2 is 1,640 acres, which is approximately 3.7% of all NFS lands in the Fourmile project area (see Table 9, NNIP). The risk of establishment, persistence, and spread of NNIP will be increased in these areas. Implementation of project design features would reduce some of the risk of NNIP introduction, establishment, persistence and spread.

Cumulative Effects: Cumulative effects are the changes to the environment caused by the incremental impact of the proposed action when added to past, present, or reasonably foreseeable future actions. It should be noted that while the cumulative effects analysis considers sources of NNIP on other ownerships, specific information on land management activities that result in soil disturbance that may contribute to the spread of NNIP on private, county or state lands is unknown. Thus, calculating acres of soil disturbance is limited to the National Forest System (NFS) lands. The analysis area for cumulative effects is the ER-FL RD and includes several other vegetation management projects on the district, relative to the Fourmile project.

As seen in Tables 7 and 8 (NNIP), no projects have been completed within the Fourmile project area within the past five years and there are no current projects within the Fourmile project area. There are two large vegetation management projects, Early Successional habitat Improvement (ESHI) and Polecat Pine, which are ongoing in the Fourmile Project area. Since both of the aforementioned vegetation management projects are partially implemented and there are additional activities planned in the future, the entire project was included in reasonably foreseeable.

As seen in Table 9 (NNIP), past and present projects have resulted in 0.0% and 0.3% change in soil disturbance for both Alternatives 1 and 2 across the Fourmile project area and ER-FL RD, respectively. When reasonably foreseeable projects, including the proposed activities in the Fourmile project, are accounted for, soil disturbance across the Fourmile project area increases to 0.3 % and 4.0% for Alternatives 1 and 2, respectively, and 1.6%, and 2.1% across the ER-FL RD for Alternatives 1 and 2, respectively. When compared to Alternative 1, Alternative 2 results in 3.7% and 0.5% more cumulative soil disturbance in the Fourmile project area and ER-FL RD, respectively.

Past and present projects have resulted in 0.0% and 1.0% change to light availability for both Alternatives 1 and 2 across the Fourmile project area and ER-FL RD, respectively. When reasonably foreseeable projects, including the proposed activities in the Fourmile project, are accounted for, total light availability across the Fourmile project area increases to 2.2% and 16.8% for Alternatives 1 and 2, respectively, and 5.6%, and 7.6% across the ER-FL RD for Alternatives 1 and 2, respectively. Cumulative light availability as a result of the proposed activities in Alternative 2 increased by 14.6% in the Fourmile project area and 2.0% in the ER-FL RD when compared to Alternative 1. Light availability effects can be expected to last until canopy closure rebounds to 80% in five to 50 years, depending on proposed harvest method.

Most projects across the ER-FL RD maintain or reduce total road miles. Past and present projects have resulted in 0.0% and -1.7% road change for both Alternatives 1 and 2 across the Fourmile project area and ER-FL RD, respectively. When reasonably foreseeable projects, including the proposed activities in the Fourmile project, are accounted for, road change across the Fourmile project area is 0.0% and -35.0% for Alternatives 1 and 2, respectively, and -7.8%, and 13.3% across the ER-FL RD for Alternatives 1 and 2, respectively. Cumulative road change as a result of the proposed activities in Alternative 2 is reduced by 35.0% in the Fourmile project area and 5.5% in the ER-FL RD when compared to Alternative 1. It is assumed that the net reduction in roads would halt motorized traffic, reducing the risk of NNIP spread by vehicle vectors, however the risk spread via other vectors such as wind, water and animals would remain.

Conclusion: A contractual equipment cleaning clause would be adopted during Fourmile project implementation reducing the risk of NNIP propagule transport. Documented NNIP infestations will also be avoided during project implementation. Exceptions may be made on a case by case basis and will be evaluated by the District Botanist/Ecologist. All stands proposed for harvest in the Fourmile project area infested with garlic mustard (*Alliaria petiolata*) or stands that require travel through garlic mustard infestations for implementation, will be a ‘winter only’ harvests to reduce the risk of introduction and spread.

With implementation of project design features, Alternative 2 would not directly and indirectly increase the risk of spread and/or introduction of NNIP. The design features reduce the actual potential for NNIP spread, introduction, establishment, and persistence as a result of project actions. Therefore, it is not anticipated that the threshold of spreading known infestations due to proposed actions would be exceeded, nor will the project exceed a low risk of new introductions due to the proposed actions. With the implementation of design features specifically to minimize spread and introduction of NNIP, Alternative 2 is consistent with Forest Plan Standards and Guidelines.

3.6 Fuels

This section of the EA looks at how the Fourmile Project proposal of a prescribed burn would affect hazardous fuels and our ability to suppress a wildfire due to the development of homes on private lands, fire prone fuel types growing on sandy soils, and the high recreational use of the area. The Townships of

Hiles and Three Lakes within the Eagle River-Florence Ranger District boundary have been identified as having a high risk for potential wildland fire. These areas were nationally recognized as such in the Federal Register as a 'Community-at-Risk' (Federal Register January 4, 2001). Treating stands as proposed would reduce the amount of fuel, resulting in lower fireline intensities that would allow for direct attack. Firefighter and public safety will continue to be the first and foremost goal of the U.S. Forest Service when conducting fuels treatments. The proposed actions are considered high priority to further these goals.

Our ability to use ground resources to attack a wildfire depends on anticipated fire behavior related to fuel types. Standard fuel models are used to represent wildland fuel types according to quantity and size, i.e. fuel loading. The standard measure of fire behavior that gauges the ability of a resource to attack a fire is fireline intensity. The visual representation of fireline intensity is flame length. The rate of spread of a fire influences fireline intensity and indicates if fire suppression resources could successfully curtail the spread of a fire. Therefore, rate of spread and fireline intensity (flame length) are the measures chosen to evaluate the success of ground firefighting resources.

Past fire occurrence and weather data for the project area were analyzed to determine average and very high fire weather conditions. Fuel models were assigned to represent fuel types and fuel loading. After inputting the weather conditions, fire behavior prediction software was used to predict fire behavior outcomes for the assigned fuel models. These were compared with established fire suppression interpretations for the ability of different firefighting resources to attack a wildfire under intensifying fire conditions.

Hazardous fuels reduction treatments are proposed in 18 stands in the vicinity of the previously mentioned communities at risk. The fuels reduction treatments consist of 1) prescribed burn to remove hazardous fuel accumulations and restore ecological processes 2) convert red pine to less fire-prone species in select locations 3) remove ladder fuels throughout strategically located stands in entirety 4) treat residual slash from conifer timber sales by biomass utilization, pile burning or mechanical treatment.

With no action, the general health of federal lands within the project would continue to decline, increasing the wildland fire risk as the fuel loading would continue to increase with the accumulation of ground and surface fuels on the forest floor and the increased availability of ladder fuels in the form of seedlings and saplings. As fuels accumulate, it is expected that future fires would burn with more intensity and result in dramatic changes to one or more of the following: fire size, severity, and landscape patterns. Coupled with the increased risk for human-caused fires in the area, there is a need to treat the high risk stands within the project area. Within untreated stands, fireline intensities would closely approach or exceed the threshold and rates of spread would exceed fireline-building rates for ground resources in the conifer stands. Protection of private property and structures would be jeopardized and fire suppression efforts under very high fire weather conditions would be difficult to contain with initial attack resources.

The proposed action would reduce fuel loadings on all treated sites such that fireline intensities would stay below the threshold, allowing for direct attack at the head of a wildfire by ground resources. With no action, stands within the project area would maintain fuel loadings sufficient to thwart any attempts to directly attack a wildfire using ground resources. The stands in the area not treated by the proposed action may still maintain heavy fuel loadings; however, the continuity of heavy fuels would be disrupted by the proposed treatments, relieving the threat of a large, high-intensity wildfire.

Direct effects of the action alternative using the controlled use of low intensity fire to burn thinned mature forest canopy would reduce surface fuel loading, further reduce ladder fuels, and raise base crown heights. Raising the base crown height and reducing surface fuel loading will separate the vertical continuity between the tree crowns and the surface fire reducing the likelihood of a crown fire. Under burning would disrupt horizontal continuity of surface fuels, encourage vertical variability in fuels, and reduce the intensity of future fires.

Indirect effects from underburning will reduce future surface fuel loading, reduce fire intolerant species reproduction and reintroduce fire in its natural role in the ecosystem. Low intensity prescribed fire will maintain an open stand with a mature over story that is less susceptible to high severity fire and will provide a safe and effective fire suppression environment. Reintroduction will aid in natural nutrient cycling aiding in the health and vigor of the treatment areas.

Cumulatively, there have been no hazardous fuels reduction projects within the past ten years in this area. Given the flammable fuel types, the rapid development and population growth, additional hazardous fuels management projects are likely to be proposed. The proposed actions would improve the overall health of the stands treated thereby reducing the fire behavior over the long run.

Ultimately, this project reduces the fire behavior by treating the fuels on federal lands as the population and housing grow and provides a greater margin of safety for the public and more time for firefighters to safely contain a wildland fire. The planned treatments would reduce fuel loadings on all treated sites such that fireline intensities would stay below the threshold, allowing for a safe direct attack at the head of a wildfire by ground resources. Overall, the fuels reduction within the proposed action would reduce the fuel loading and the likelihood of catastrophic wildfire sufficiently to enable ground resources to attack a wildfire in all stands determined to be a high fuel hazard.

3.7 Threatened and Endangered Wildlife Species (TES), and Regional Forester Sensitive Wildlife Species (RFSS)

Issue: The proposed harvesting, site preparation, and road reconstruction and construction may decrease the viability of some wildlife TES and RFSS by temporarily reducing the amount of suitable habitat available to them.

The purpose of the Biological Evaluation is to review Forest Service activities for possible effects on endangered, threatened, proposed, or sensitive species (Forest Service Manual 2672.4). "Sensitive" species include "those plant and animal species identified by a Regional Forester for which population viability is a concern" (Forest Service Manual 2670.5). The Forest Service is responsible for protecting all federally proposed and listed species and the Regional Forester Sensitive Species (sensitive species). If any federally listed or proposed or sensitive species are observed in the project area prior to or during project implementation, the Biological Evaluation, project, and effects would be reviewed and potential mitigation measures identified if needed.

Biological Evaluation Determinations for Federally Listed Species

All federally listed species were considered for analysis in the Biological Evaluation; however, only those species with suitable habitat and at least a marginal potential of occurrence within the project area were analyzed in detail. The Biological Evaluation (BE) considered effects of the project on federally listed species.

- Of those evaluated in detail, it was found there would be:
 - ***“No Effect”*** for five of them: Rusty Patched Bumble Bee; Eastern Timber Wolf, Kirtland Warbler; Fassett’s Locoweed, and Canada Lynx.*
 - ***“May affect, likely to adversely affect but not result in jeopardy”***: The northern long-eared bat (NLEB) was the only species to have this determination.

A summary of effect for those species that had a ***“may affect”*** determination are below. See the Biological Evaluation for a full analysis to support the determinations for all federally-listed species evaluated.

* Eastern Timber Wolf was incorrectly included in the Regional Forester Sensitive Species (RFSS) section in the Draft EA, its determination has been moved to the correct location above.

Northern Long-eared Bat: This federally listed bat species has a “*May affect, likely to adversely affect but not result in jeopardy*” determination.

The proposed actions in the Fourmile project are likely to adversely affect individuals in stands roosting from summer harvesting, assuming that the species is present in the affected stands. However, this level of impact is not likely to result in jeopardy to the continued existence of the NLEB. Activities proposed by the Fourmile project are not prohibited by the final NLEB 4(d) Rule as these activities will not result in removing a known occupied maternity roost tree or removing any trees within 150 feet of a known occupied maternity roost tree from June 1 through July 31 remove trees within 0.25 mile of a hibernaculum at any time.

Potential effects of the action include direct effects to NLEB present within the Fourmile project area when activities are being conducted, and indirect effects as a result of changes in habitat suitability. The types of timber harvest activities that may affect habitat suitability include even-aged management (clearcut, shelterwood/seed tree). Direct effects include mortality, injury, harm, or harassment as a result of removal of roost trees, noise, and general human presence.

No summer maternity roosts are currently known on the ER/FL RD at this time. While not yet discovered, individual summer roosting trees or trees for maternity colonies may be removed during harvest treatments. However, bats will have suitable roosting habitat within or near the same location that can be utilized. While individual roosting trees or trees for maternity colonies may be removed during harvest treatments, bats would have suitable roosting habitat within or near the same location that can be utilized. Since roost switching is common and expected among these bat species, there is a high probability that with implementation of project guidelines for reserved trees, suitable roosting trees would be found. There is also a large quantity of suitable foraging and roosting habitat in and outside the project area on FS and non-FS lands (BE Table 3 and Table 4).

The project standard and guidelines, which include retaining closed canopy structure in mature forest within 200 feet of seasonal ponds, and leaving all snags possible in harvest areas, will reduce the potential for direct effects to the NLEB. However, the potential for direct effects from timber harvests, road-related activities, and associated human presence is greatest during spring and early summer (mid-April to July) when bats return from hibernation, spring temperatures result in periodic use of torpor, and non-volant (flightless) young may be present. In addition, bats impacted by WNS have additional energetic demands and reduced flight capability.

Indirect effects from the action may result from habitat modification and primarily involve changes to roosting and foraging suitability. Timber harvests and tree clearing associated with road-related activities could have both adverse (such as active season tree removal of a roost tree) and beneficial effects on habitat suitability for the NLEB. Given the scope of the projects in relation to the overall action area, these projects will not substantially alter the overall availability or suitability of NLEB roosting or foraging habitat in the action area.

The cumulative effects for the NLEB are summed up in the “NLEB Biological Assessment for the CNNF Batched Vegetation and Prescribed Fire/Fuels Reduction Management Projects (BVMP) 2003-2015 (pg. 15-18). Where it was determined that “there are 1,619,019 acres of potentially suitable summer roosting habitat inside the National Forest’s exterior boundary and an additional 1,555,693 acres of suitable habitat on state and private lands outside but within five miles of the National Forest Boundary. This provides an estimated 3,174,712 acres of suitable NLEB summer roosting habitat on all lands within and a five-mile buffer of and including lands within the CNNF exterior boundary. Of the over 3 million acres of

potentially suitable summer NLEB roosting habitat on these lands, approximately 1,104,325 acres of habitat is estimated to be treated in some way from on-going vegetation projects on the Forest. This cumulatively would result in indirect effects to 35% of all potentially suitable summer roosting NLEB habitat if all projects were to occur simultaneously across this area. Because these projects take long periods to plan and implement, and because this does not account for in-growth of stands previously treated that would become 10 years old or greater during the implementation period, the actual cumulative effect to NLEB from these projects is anticipated to be less than the effects described here.”

On non-FS lands inside and adjacent to the project area, there are about 6,360 and 11,254 acres of habitat that may be suitable foraging and roosting respectively (BE Table 4 and Table 5). In that same area, harvest on MFL lands over the past 15 years totals 950 acres (0.07 % of total) and there is about 1,915 acres (0.14 % of total) of harvest planned in bat roosting habitat. All of this timber management on non-Forest lands may alter available NLEB summer roosting habitat but a very low percentage of the total habitat available. Additionally, based on the same rationale discussed above on Federal lands and that NLEB habitat is abundant and well distributed within the Forest, we anticipate that harvest activities on non-Forest lands will result in minimal cumulative effects to the species or its habitat. Further information can be found in the Biological Evaluation (BE) located in the project record.

3.7.1.1 US Fish and Wildlife Consultation

The US FWS determined that the incidental take that is carried out in compliance with the interim 4(d) rule does not require exemption in an Incidental Take Statement. Accordingly, there are no reasonable and prudent measures or terms and conditions that are necessary and appropriate for these actions because all incidental take has already been exempted. The activities that are covered by the interim 4(d) are as follows: forest management activities, including various types of timber harvest, road construction and decommissioning, associated noise and general human presence, and site preparation.

The recent listing of the NLEB did not occur as a result of current population declines or viability concerns on the CNNF or in the state of Wisconsin. It was in response to the potential vulnerability to WNS and declining bat population in Midwest and eastern states and Canadian provinces as a result of WNS. The potential for WNS occurring on the CNNF is highly unlikely due to no known hibernacula's. The CNNF and this project area continue to provide essential summer roosting and foraging habitat and recent surveys show a good presence or absence occurrence and representation of bat species. The forest plan would continue to provide and protect those critical bat habitats during the period of year in which they utilize our CNNF the most.

Biological Evaluation Determinations for Regional Forester Sensitive Species (RFSS)

All sensitive species were considered for analysis in the Biological Evaluation; however, only those species with suitable habitat and at least a marginal potential of occurrence within the project area were analyzed in detail. The Biological Evaluation considered effects of the project on 77 Regional Forester Sensitive Species, and 13 Likely-to-occur Regional Forester Sensitive Species. Eleven animal species were evaluated in detail.

- Of those evaluated in detail, it was found there would be a **“no impact”** on the following sensitive species: monarch butterfly; wood turtle; bald eagle; Connecticut warbler; and West Virginia white butterflies.
- A summary of effect for species that had a **“may impact”** determination are below. See the Biological Evaluation for a full analysis to support the determinations for all Regional Forester Sensitive Species evaluated.

Spruce Grouse: Determination “*May impact individuals but is not likely to cause a trend to Federal listing or loss of viability.*”

Direct and Indirect Effects: The project area contains about 6,600 acres of suitable habitat for spruce grouse. This includes 6,262 ac. of suitable habitat that will not have harvest treatments and 398 ac. (6%) of suitable habitat affected by proposed harvest treatments. Harvest treatments will include 217 ac. of clear cuts (29 ac. balsam fir and 188 ac. aspen) that will be unsuitable habitat for the next five years and 84 ac. of overstory removal (balsam fir) and 98 ac. of thinning (93 ac. aspen and 5 ac. balsam fir). These thinning and overstory removal treatments will result in the stands being suitable habitat after harvesting due to that habitat is suitable at all ages. As a result, directly after implementation there will be a 6.17% decrease of habitat in the project area (Table 20, BE). Contributing to this decrease is 194 acres of suitable habitat becoming unsuitable due to outgrowth or growing too old beyond the age class parameters to suitable habitat. Five years after project implementation, there will be an increase in suitable habitat of approximately 3.0% from current conditions but still result in an overall decrease in habitat of 3.0 % from 2018 (Table 20, BE).

The project proposes to harvest suitable habitat that is adjacent to low land conifer stands with no harvest treatments that are also considered habitat for spruce grouse. These stands with proposed harvest were surveyed and there were no spruce grouse recorded. These proposed cuts include 154 ac. of clear cuts, 82 ac. overstory removal and 81 ac. of thinning treatments. The clear-cut stands will likely create an abrupt edge between the two stands due to lack of transition zone between the two habitats. However, with the overstory removal and thinning treatments there will typically be a transition zone (buffer) of timber that will remain along with timber in the harvest stand that can be used by the grouse. There are also red pine stand thinnings proposed adjacent to 8 large low land conifer stands that have documented spruce grouse observations. Spruce grouse researchers have reported that red pine stands along the swamp edge can be used by spruce grouse for cover during winter and perhaps also for male breeding-display areas. These thinning treatments may have short-term negative impacts on winter use for some individuals, as a reduction of canopy closure could cause birds to move to other nearby stands to overwinter (Peczynski, 2014). However, this impact will be reduced due to untreated red pine and other pine habitat nearby and scattered throughout the project area.

Cumulative Effects: At the District level in 2023 and 2028, there will be small reduction in suitable habitat (Table 20, BE). These decreases are small due to an almost equal balance of ingrowth and outgrowth of suitable habitat. For the Nicolet landbase at those times, suitable habitat will also have a small decrease of about 1%. These reduction in 2028 are primarily from harvest treatments associated with the Lakewood SE project on the Lakewood-Laona Ranger District (LK/LA RD).

On non-FS lands inside and within the 1-mile buffer around the project area, there are about 3,700 acres of habitat that is identified as habitat for spruce grouse (Table 4 and Table 5, BE). Inside the project area there are large blocks of habitat north of Lone Stone Lake and around Julia Lake. Also, on the south end of the project suitable habitat is located in lowlands near the Eagle River area that are owned by BCPL Trust in and outside the project area. Also in the 1 mile buffer there are stands of spruce/fir in the Little Fork Lake area that could support spruce grouse which would be a good source to those populations on the ER/FL RD. Past land practices on these non-FS lands includes clearcutting fir/spruce (40 acres) and thinning of black spruce (57 acres). Future timber management involving suitable habitat include 12 acres of planting fir/spruce, 116 acres clear-cutting, 60 acres of shelterwood cuts, 12 acres of selection cuts, 49 acres thinning and 2 acres overstory removal.

Further information can be found in the Biological Evaluation (BE) located in the project record.

Black-Backed Woodpecker: “May impact individuals but is not likely to cause a trend to Federal listing or loss of viability.”

Direct and Indirect Effects: The project area contains about 9,588 acres of suitable habitat, of which 9,340 acres (97 %) is lowland conifer that would not be treated. Suitable habitat affected by implementation of this project include harvest treatments for 60 ac. of jack pine (11 ac. clearcut, 16 ac. shelterwood and 33 ac. salvage) and 5 ac. black spruce that will be thinned. This treatment would remove most of the dying conifer component, except for reserved areas.

These harvest treatments would result in an immediate loss of 0.6% suitable habitat in the project area that would last more than 5 years. Since there would also be no in-growth of suitable habitat this loss would still be present in 2028 (Table 24, BE). After harvest is completed there will be 60 ac. of jack pine that would be replanted to jack pine and it would once again become favorable habitat after 30 years. Black-backed woodpecker may also find conifer snags that provide some resources to them scattered throughout other forested stands in the project area. For example, stands in which white pine, red pine, tamarack or balsam fir is a component, are used at times, but the density of resident black-backed woodpeckers are generally low. No black-backed woodpeckers were observed in this stand during 2017 surveys.

Cumulative Effects: At the District level, there is currently 54,198 ac. of suitable habitat that will have a small reduction of 1.1% after implementation and in 2028. These reductions would occur from jack pine harvests within the Fishel, NW Howell and Phelps project areas. For the Nicolet landbase there is 92,988 ac. of suitable habitat that will have similar reduction at those times with these reductions being from jack pine harvest on the LK/LA RD (Lakewood SE and McCaslin) (Table 23, BE).

On non-FS lands inside and adjacent to the project area, there are about 5,296 acres of habitat that may be suitable to black backed woodpeckers (Table 4 and Table 5, BE). Past land practices on these non-FS lands total 119 ac.; spruce thinning 57 ac., spruce clearcuts 31 ac., and clearcutting 22 ac. cedar and 9 ac. fir. Future management involving suitable habitat include planting 12 acres spruce and harvest on 225 ac.; clear-cutting 116 acres, shelterwood 60 ac. and thinning 49 ac. Harvest treatments that would maintain suitability of habitat after harvest would occur on 49 acres.

The black-backed woodpecker has never been abundant in on the ER/FL RD and likely exists at low densities until broad-scale habitat conditions change. This would occur when suitable habitat becomes more abundant with events like dying conifer (insect infested), low intensity fires, windthrow, or beaver flooding. In recent years, black backed woodpeckers have occasionally been located in spruce and other pine forests that have been infected by disease. Currently there are still numerous spruce stands scattered across the District which have been infected by spruce bud worm (Dan Reynolds and Katie Theisen, personal communication, 2018). Many of these dying and/or dead stands will be harvested in the future but until that time they are providing habitat for the woodpeckers. Management objectives are in place to salvage this dead and dying timber whenever timber volumes are economically feasible to harvest. This could result in a reduction of habitat for this species and potentially prevent or restrict the eruption of the local population. However, because salvage harvest is only done where economically feasible, small pockets of this habitat are probably always present on the landscape. Also, where disease, windthrow and flooding occurs in the various non-management areas (Whisker Lake, Blackjack, and Headwaters Wilderness areas), black-backed woodpecker habitat will be left undisturbed.

Further information can be found in the Biological Evaluation (BE) located in the project record.

Red-shouldered Hawk: This sensitive bird species has a “*May impact individuals but not likely to cause a trend to federal listing or loss of viability due to reduction of suitable habitat.*” determination.

Direct and Indirect Effects: In 2016 and 2017, there were 78 and 81 red-shouldered hawk territories respectively monitored on the NNF (Table 18). However, no territories or any red-shouldered hawk nests were located within the project area. As a result, there would be *no direct impacts* to nesting birds from both alternatives. If any new territories are located in the future, nest protection measures would be implemented (USDA Forest Service, 2004a). This would include a 30-acre no cut buffer surrounding nest site. Surrounding that buffer would be 330 ft. buffer where only activities that do not lower canopy closure below 80% and that are considered uneven-aged management would occur.

For *indirect effects*, habitat effects at the project level are displayed in Table 19 of the BE. At the time of implementation there would be a loss of 5.49 % of suitable habitat for Alt. 2. This reduction is primarily due to selection cuts occurring in stands with a dbh < 10 inches (86%) and as a result the canopy closure will be reduced below 80%. However, five years post implementation the canopy closure will return to > 80% and the stands will once again become suitable habitat. At this time the total amount of suitable habitat in the project will return to pre-implementation amounts. The remain 14% (126 ac) will be unsuitable habitat for 50 years due to those treatments are clearcuts and shelterwood cuts.

There are no known nesting red-shouldered hawks within the project or 1-mile buffer area. At the project level, there would be a loss of suitable habitat but most of that would return to suitable habitat within 5 years. Across the District, alternative 2 would *cumulatively* result in a decrease at the time of implementation (-2.7 %) and then a return close to the original acres in 5 years (0.57%) (Table 19, BE). With the action alternative, the total amount of available suitable habitat for red-shouldered hawks on the NNF landbase would return close to 2018 amounts (-0.06%) (Table 19, BE). Further information can be found in the Biological Evaluation (BE) located in the project record.

American Marten: This sensitive mammal species has a “*May impact, but not likely to adversely affect due to temporary reduction in suitable habitat*” determination.

Direct and Indirect Effects: Within the project area there exists 18,244 acres of suitable habitat for marten (Figure 11 and Table 22, BE). Approximately 15,132 ac of this habitat is comprised of northern hardwood forest and/or hemlock, while the remaining 3,112 acres is aspen and birch. About 10,470 acres (57%) of this total suitable habitat will not have any harvest treatments and will remain suitable habitat until they subside naturally or are managed in a future project; 7,182 ac. hardwood, 1,414 ac. hemlock, 360 ac. northern hardwoods/hemlock and 1,517 acres of aspen and birch (Figure 11, BE).

In suitable hardwood habitat there is a total of 6,176 acres of harvest treatments and of that 5,646 ac. are planned to have individual tree harvesting that will be selection cuts and all Argonne Experimental Forest harvest treatments. The canopy closure in 4,866 ac. (77%) of these stands, will remain at or above 80% and thus remain suitable habitat immediately after harvest. The 780 acres that would become unsuitable immediately after harvest is due the forest canopy falls below 80% crown closure. However, five years post treatment these 780 acres are expected to return to 80% or more and again become suitable habitat. There will be 126 ac. of clearcut and salvage cuts in preferred upland mature hardwood habitat that will result in a long-term loss of only 0.7 % in the project area. The remaining 404 acres will have improvement and thinning treatments that will result in the habitat remaining suitable immediately after harvest.

In aspen and birch stands that are suitable habitat, there will be 1,568 acres (50%) harvested within a 10-year cycle. Approximately 1,265 ac. would be made unsuitable for ~40 years due to clearcut harvests treatments. However, mature aspen and birch types are at or entering into a growth stagnation and deterioration phase where suitable habitat characteristics are beginning to decline from natural regression

processes of succession. The consequences of this aging are a natural conversion of the habitat to longer lived species with an establishment period in which the canopy closure is expected to drop below the desired 80% cover favored by marten and thus become unsuitable habitat. Our experiences with natural succession from aspen to the next forest condition indicates that habitat conditions are not equally exchanged from mature/over mature aspen types to mature northern hardwoods or other forest replacement types. As a result, these aspen and birch stands would become unsuitable marten habitat over time with or without timber management occurring.

The implementation of these harvest treatments in 2023 (906 acres hardwoods, 1,265 acres aspen/birch) will result in a 6.45% reduction in marten habitat (Table 22, BE). This is mainly from the clearcut and shelterwood cuts occurring in aspen habitats and selection cuts in hardwood stands with a DBH < 10 in. These aspen/birch saw log sized habitat types have been identified as being “highly used” by marten (Dumyahn, J.B., Zollner, P.A., and J.H. Gilbert, 2007). Even though this habitat has been documented as winter habitat for marten in that study, more localized marten research on the ER/FL RD classified aspen, aspen/conifer mix stands as suitable but not preferred marten habitat (Vold and Woodford, 2020). The more abundant habitat types of deciduous, mixed deciduous and coniferous were defined as preferred habitat (Vold and Woodford, 2020). These hardwood types are also the least impacted suitable marten habitat by harvest treatments within the project area. The remaining 303 acres of aspen and birch stands would have thinning treatments and would remain suitable after harvest. As a result, there will be 16,046 ac (88%) of suitable habitat in the project area that will have no harvest treatments, or the habitat will remain suitable immediately after harvest (Figure 11, BE). Five years after implementation in 2028, the project area’s suitable habitat will increase to 98.3% of pre-harvest levels mainly due to an addition of 274 ac. from in-growth of maturing stands and also individual tree harvesting that will be selection cuts and all Argonne Experimental Forest harvest treatments (780 ac.) becoming suitable again.

In MA 2B stands suitable for marten that have harvest treatments, prescriptions will incorporate MA 2B Reserve Tree Guidelines relative to tree numbers and diameters to even and uneven-age managed stands, where existing tree diameters allow (Forest Plan p. 2-22). These and other harvest treatments will not all be implemented at one time, as a result suitable undisturbed habitat will exist across the project area as refugia while logging is occurring over several years (Figure 11, BE). Also, creation of critical snag habitat will occur with Forest Standard and Guidelines – Reserve snag guidelines for even-aged and uneven aged managed stands. This will reserve all dead snags and live den trees up to 10 trees/snags per acre, unless they present a safety concern. There will be an emphasis placed on using the largest snags and den trees available. Those snags felled for safety reasons should be left on site as coarse woody debris wherever possible and if needed, additional snags will be recruited from live reserve trees (Forest Plan p. 2-14).

Cumulative Effects: Currently there are approximately 154,562 acres of suitable marten habitat within the ERFL RD (Figure 1, BE) and 314,594 acres of suitable habitat on the Nicole landbase. At the time of project implementation (2023) there would be a small decrease and increase in suitable habitat at the District and Forest levels respectively with the Action Alternative (Table 22, BE). However, by 2028 the Action Alternative would have an increase in suitable habitat at the District (5.3%) and the NNF landbase (7.8%). This increase across the District will occur mainly from the ingrowth of suitable aspen habitat (12,209 ac). This trend of increasing suitable habitat would continue at the Nicolet landbase level at the time of implementation and 5 years post implementation with an increase of almost 24,500 ac that would also come from an in-growth of aspen habitat (Table 22, BE).

On non-FS lands inside and within the 1-mile buffer to the project area, there are about 8,500 acres of habitat that may be suitable to marten (Table 4 and Table 5, BE). Assuming that the age structure of the northern hardwoods forested acres (4,505 ac) is similar to the hardwoods on FS land, most of those acres are suitable now. Within the project area and 1-mile buffer over the past 10 years there has been 61 ac. of

aspen and birch management (47 ac. clearcut, 10 ac. thinning and 4 ac. shelterwood). There was also about 145 ac. of hemlock harvested, however these stands will remain suitable habitat due to harvest treatments (selection and thin cuts). There was also about 415 ac. of upland hardwood management that will also remain suitable due to the harvest treatments being selection and thinning cuts. In the future in these areas 1-mile buffer over the past 10 years there has been 230 ac. selection cuts in upland hardwoods and 125 ac. of aspen harvest (77 ac. clearcut and 48 ac. other) along with 13 ac. aspen planting. In the future within these areas there is planned 231 ac. aspen clearcutting and 22 ac. with thinning harvests proposed. Also being planned is 1,065 ac. of selection/release cuts in northern upland hardwoods along with 79 ac. of selection cuts in hemlock stands. Both of these forest types will remain suitable habitat after harvest due to the canopy closure will remain at or above 80%. Based on the abundance of suitable habitat, implementation of these management plans on non-FS lands is unlikely to have a detrimental effect on this species. However, there are no records of marten utilizing these non-FS lands.

Further information can be found in the Biological Evaluation (BE) located in the project record.

Big Brown Bat, Little Brown Bat, and Tri-colored Bat: These sensitive species, and Wisconsin state threatened bat species, have a “*May impact individuals, but not likely to cause a trend to Federal listing or loss of viability*” determination.

The little brown bat, big brown bat, and tri-colored bat (or eastern pipistrelle) are listed as CNNF RFSS due primarily to concerns over White-Nose Syndrome (WNS) and not because of current scarcity or viability concerns on the Forest. The three RFSS bats have been included as a measure due to their vulnerability to WNS. As of the winter of 2015, WNS has been documented in Wisconsin as well as neighboring states Minnesota and Michigan (Figure 4, BE). Our forest plan standards and guidelines do not mention bats specifically, but lend themselves to providing and protecting those habitat characteristics which bats favors and require during the period of time in which they utilize the CNNF the most.

Big brown and little brown bats were detected in the project area; however, no tri-colored bats were recorded. There is enough similarity in the type of roosting and foraging habitat among the four bats (including the northern long-eared bat) species to analyze them together at the project scale. While there are some species specific differences in use of summer roosting and foraging habitat between the little brown, big brown, tri-colored, and northern long-eared bats, we do not have adequate information to analyze these individual differences at the project scale.

Therefore, the analysis for the little brown, big brown, and tri-colored bat is the same as that presented under the northern long-eared bat (NLEB) section under the federally listed species. All assumptions, direct, indirect impacts along with the cumulative impacts for the NLEB are applied to the little brown, big brown, and tri-colored bats.

All forest plan standards and guidelines and Fourmile project design features described in the NLEB section above also apply to RFSS bats. Additionally, mitigations and protections provided by the FS Eastern Region Conservation Measures specific to NLEB would also provide some benefit to RFSS bats. Further information can be found in the Biological Evaluation (BE) located in the project record.

3.8 Soil Productivity

This section of the EA summarizes how the proposed Fourmile Vegetation Management project would affect long-term soil productivity. The more detailed resource report is located in the project record. Activities associated with timber harvest, mechanical site preparation, prescribed fire, and road construction in this proposal would result in measurable soil disturbance, but total detrimental soil disturbance would be well under acceptable thresholds. The soil type(s) for each proposed treatment area

are assigned a rating of potential risk using criteria-based interpretations derived from standard soil rating criteria.

The effect to soil is measured by estimating the percentage of a treatment area that would be traveled by heavy equipment and the potential for that affected area to be compacted, rutted, displaced, or eroded. The potential effects from nutrient loss after tree bole removal and prescribed fire are estimated. These estimates include consideration of soil resource protection measures that are known to control the extent and duration of disturbance. The estimated percentage of detrimental disturbance per treatment area was compared to the measurement standards and threshold values dictated by the Eastern Region of the Forest Service to determine when soil disturbance effects are unacceptable (limits of change for soil properties are exceeded and result in major changes to soil quality and productivity). Previous impacts of management on these same areas were considered to determine cumulative effects.

The soil resource on more than 99 percent of the project areas is currently in good condition and soil properties are well within their natural range of variability. Soils on project sites pose a low risk potential for detrimental disturbance from the conventional ground-based logging, mechanical site preparation, prescribed fire, and road construction activities proposed. The project would adhere to Forest Plan standards and guidelines and resource protection measures for specific soil types, eliminating or minimizing potential adverse soil resource impacts. At most, an additional 1 to 2 percent of the soil resource in the harvest treatment areas would sustain long-term detrimental impacts from proposed activities. About 97 percent of the treatment areas would remain in a non-detrimentally disturbed condition, which meets National and Regional soil quality standards.

Based on findings of *minimal direct and indirect effects* from soil compaction, rutting, erosion, displacement, or nutrient loss, the action alternative – Alternative 2 – would **not** impair the long-term productivity of the treatment areas proposed or any adjacent areas. Additionally, Alternative 2 would **not** be expected to result in appreciable adverse *cumulative effects* to the quality of the soil resource in the project area. These determinations are based on the best available science, including: literature reviews; peer reviews; and ground-based observations.

Further information can be found in the Soil Resource report in the project record.

3.9 Water Resources

Analysis determined activities associated with mechanical operations for timber harvest in addition to permanent road construction, road re-construction, and road decommissioning would not impair the long-term water quality. Timber harvest treatments proposed in alternative 2 and that are adjacent to riparian areas would follow Best Management Practices for water quality, as well as Forest Plan standards and guidelines for wildlife, fish, soil, and water resources. BMPs when properly implemented would ensure that project activities would not cause long term impacts to water quality. During harvest operations stands would be monitored on a regular basis to ensure project design features are implemented and maintained. All of the project design features, when properly implemented and maintained, would ensure that project activities would not impair water quality.

Direct and Indirect Effects: Harvest area thresholds for peak snowmelt and storm flow runoff were identified using existing research regarding the effect of aspen clearcutting on stream flows in the Lake States. The analysis indicates that adverse impacts to hydrology and water quality are unlikely as a result of the proposed aspen clearcuts in alternative 2. The two selected watersheds located within the project area do not approach the thresholds for peak flows of snowmelt or rainfall runoff. Geographic Information System (GIS) was used to identify and calculate the total acreage of proposed treatment areas (by type) that are located within riparian management zones (RMZs). One hundred feet is the largest riparian management zone (RMZ); designated trout streams, (regardless of width), streams three feet wide

and wider as well as lakes have a 100 ft. RMZ while streams less than three feet wide and streams less than one foot wide have a 35 ft. RMZ. The RMZ widths used in this analysis are identified in Wisconsin's Forestry Best Management Practice's (BMP) for Water Quality where management practices can be modified to protect water quality, fish and other aquatic resources (WDNR 2010).

In summary, alternative 2 proposes up to 105 acres of RMZ harvest treatments where the desired future condition of the stand is to promote the growth and retention of long lived tree species appropriate to the site. There are no aspen stands proposed for clear cut harvest activities within the selected trout stream 300 ft. buffer zones. As a result of the proposed clear cut harvest activities for Alternative 2 there would be no impacts from snowmelt runoff or rainfall runoff as the open area throughout the watersheds would not reach the thresholds. In alternative 2, decommissioning of up to 0.03 miles of road located in RMZs, 2.33 miles in wetlands and one stream crossing removal would help to improve hydrologic functions by reducing sediment inputs and the potential effects from off-road vehicle use.

Based on these findings of minimal direct and indirect effects on water quality, the effect to water quality from proposed activities would not impair the long-term water quality. These assumptions are based on the findings of past timber sales where the ground cover is maintained by residual vegetation and logging slash and areas where the soil is exposed, re-vegetation typically occurs fairly quick (USDA Forest Service 2001). In addition, since 1995 BMP monitoring has been completed across various land ownerships (State, County, Federal, and Industrial/ Private Lands to evaluate the success of the program. Overall, Federal sales monitored indicated 95% of the time BMPs were applied correctly where needed, see Appendix D Implementation and Effectiveness of Wisconsin's Forestry Best Management Practices for Water Quality on the Chequamegon-Nicolet National Forest, 1995-2014. Project design features, which include BMPs, when properly implemented would ensure that project activities would not cause long term impacts to water quality.

Cumulative Effects:

Peak Flow- Snowmelt Runoff and Rainfall Runoff

Snowmelt runoff only increased by 0.4% (16.9 to 17.3%) and rainfall runoff increased by 0.3% (8.2 to 8.5%). A total of 1220 acres was used to calculate snowmelt runoff and 650 acres was used to calculate rainfall runoff. Clear cut activities located in wetlands were eliminated from the rainfall runoff calculation. See table 10 in the Aquatics/ Water Resource Report for a summary of past, present or reasonably foreseeable clear cut harvest activities located within the cumulative effects boundary. Overall, impacts to runoff from snowmelt or rainfall would be negligible as the percentages are well below the threshold.

RMZ Vegetation Management

Activities, such as, timber harvesting and road building, have occurred over the past 30 years and were implemented following Land and Resource Management Plan standards and guidelines, site specific design features to mitigate aquatic resource impacts, or contract operating restrictions on Forest Service lands. The Forest has also implemented Wisconsin Forestry BMPs for Water Quality since 1995 and recent field monitoring conducted on Forest Service land indicates that 99.8% of the time there are no adverse impacts to water quality (Kafura and Kreigel, 2015). Comments from monitoring teams observing Forest Service timber sale harvests include: 'sale layout/activities implemented excellent stream protection; where some areas the RMZ was extended to the top of slopes and some RMZs no harvest operations occurred.' 'RMZ harvest activities also promoted the growth and retention of long lived species.' 'Sale units also utilized existing roads to minimize additional ground disturbance (Kafura and Kreigel, 2015).'

Past, present and reasonably foreseeable activities that would occur within the cumulative effects RMZs include 11 acres of commercial thinning located on Forest Service lands. Harvest activities and/or planting activities located on other government or private lands was determined for the entire treatment stand. The RMZ acres were not calculated due to the lack of detail in GIS layers for these land types.

Road Activities in RMZs and Wetlands

Many of the roads within the area have been in place since the early logging era. Over the years, the road mileage has increased but it is still based on roads located during the early logging era. It has contributed to changes in drainage patterns, increased sediment loads, fish passage problems, and loss of riparian habitat (Forest Plan FEIS, p. 3-19 through 3-25). Poorly designed, located, constructed, or maintained roads and trails can be significant sources of stream sediment. Roads and trails with undersized culverts that fail frequently are considered the largest sources of sediment in streams because failure typically produces several tons of sediment and the entire volume is delivered to the stream. The Forest Service along with Townships, Counties and State entities are annually improving road stream crossing sites or road drainage problems as part of their annual maintenance program. This type of work is also occurring on recreational trails.

3.10 Air Quality

The proposed prescribed burning has very little potential to affect air quality. A burn management plan would be prepared and the burns would be conducted in such a way as to protect public safety, health, and other resources. The burning would be limited to days with good smoke dispersal. Given the proposed extent, intensity, and duration of the prescribed fire and smoke emissions, *all effects would be minimal*.

3.11 Transportation and Public Access

The Fourmile project proposes several direct impacts to roads. Within the project area there are 147.2 miles slated for decommissions, approximately 141 miles of which are currently unauthorized forest roads. An approximate 51.6 miles of existing roads are to be added to the system along with 1.2 miles of new permanent road construction and 0.2 miles of new temporary road construction. 46.4 miles of roads are to be reconstructed and a total of 48.9 miles of roads have been identified within the Fourmile analysis area for trail conversion. Impacts of the proposed road actions on resources can be found in the respective resource reports.

Road Decommissioning

There are a total of 147.2 miles of roads to be decommissioned in the Fourmile project. Of these roads to be decommissioned, 141.1 miles are unauthorized forest roads and 6.1 miles are National Forest System roads. This means that a total of 147.2 miles will be permanently removed from the transportation system, except to track the effectiveness of the decommissioning efforts, and allowed to return to normal ecological functions. These roads have been found to have a low use value to manage the forest and some are disrupting the ecological functions of the land. Based on funding and project activities these roads may be decommissioned over a long period of time and would be prioritized according to values from the Road Issue Matrix. Decommissioning efforts may include reestablishing drainage patterns, scarifying roadbeds, planting native vegetation, recontouring back to pre-road states, or may be as little as placing an earthen berm and allowed to revegetate naturally (See Appendix A for a listing of specific roads to be decommissioned.)

Road Closures

A total of 28.1 miles of National Forest System Roads are listed as currently closed. There are opportunities to close an additional 1.0 miles of system roads. These are in addition to those that have been designated for decommissioning. These roads will be removed from the MVUM and some will physically be closed. There are nine roads that access private land under Special Use Permits and should be open to the permit holder only. These roads should not be open for public access. Roads currently closed, or listed for future closures, are those which are needed for intermittent access for management activities and will be part of the National Forest road system. Refer to the Travel Analysis Report Appendix A- Road Matrix and Recommendations for individual road closures.

Adding roads to the National Forest System, reconstruction, or maintenance

The existing NF road system within the Chequamegon/Nicolet National Forest varies from two-lane blacktop surfaced roads to single lane woods roads, likewise, having differing vehicular use from passenger car to 4 wheel drive trucks. For this analysis, generally we are considering the single lane local roads. Many of the unauthorized roads were user developed and will only accommodate light duty trucks or cars making it necessary to improve or reconstruct them. Reconstruction of these roads may include corner realignment, vertical realignment, pit run placement to stabilize soils, and culvert or other drainage structures to protect hydrologic functions. There are also NFS roads that were built in the past that have not received any maintenance since the last timber sales and need heavy maintenance to bring them back to their original design criteria. Within the Fourmile Area, 51.6 miles of unauthorized roads were determined to be “Likely Needed” under TMR subpart A (USDA FS 2015) and identified for addition to the current National Forest road system. Of these 51.6 miles, 35.8 miles were identified as being in need of reconstruction. Additionally, 10.6 miles of NFS road are designated for reconstruction.

Road Construction

A total of 1.2 miles of road construction have been identified within the Fourmile analysis area over the long term for resource management. Appropriate drainage structures will be incorporated to minimize soil movement and continue hydrological functions. Upon completion of management activities, all constructed roads will be closed to protect the investment of construction and to discourage any public use pattern.

Trail Conversion

A total of 48.9 miles of roads have been identified within the Fourmile analysis area for trail conversion. Included in this total are 43.4 miles of unauthorized roads and 5.5 miles of National Forest System Roads that were found to be not needed for any other management activity. This action would remove the road from the INFRA road data base. It would no longer be used to calculate total or open road density figures.

Temporary Roads

A total of 0.2 miles of temporary road construction has been identified within the Fourmile analysis area. Appropriate drainage structures will be incorporated to minimize soil movement and provide continuity to hydrological functions. Upon completion of management activities, the road will be closed to all motorized use and decommissioned, which includes reestablishing drainage patterns, scarifying roadbeds, planting native vegetation, reshaping to natural grade or placing an earthen berm and allowed to revegetate naturally.

Public comments were received concerning the transportation system in the project area. Some persons are concerned that additional road access would negatively impact their National Forest experience, while others would like to see more road access to the National Forests. These comments were not considered as issues because the project area is already extensively roaded; only short, scattered segments of road would be decommissioned; and the approximately 147.2 miles of road decommissioning (of which 146.9 miles are already closed to public access) are proposed to protect natural resources. Also, many of the transportation changes are mirroring the access displayed on the 2018 Motorized Vehicle Use Map (MVUM); in other words, the map designated access wouldn't change much, but the on-the-ground conditions would be altered to reflect what the public map displays.

Further in-depth information can be found in the Travel Analysis report in the project record.

3.12 Climate Change

Climate change is being addressed at all levels in the Forest Service, as well as outside of the Forest Service at a global scale. The Forest Service is working with other agencies and scientists to develop strategies for addressing climate change. One effort, "The Eastern Region Climate Change Strategy", is conducted within the broad structure of an interagency Global Change Research Program authorized by Congress and the President. It is tiered to the Forest Service strategies for climate change and climate change research (USDA FS, 2008b). Another more local effort, the "Climate Change Response Framework at Chequamegon-Nicolet National Forest", will serve as a model for climate change adaptation and mitigation for national forests both regionally and nationally. This has been underway since 2009 (USDA FS, 2009a). Much additional information regarding the strategies, research, and monitoring that is underway in regard to forest sustainability and restoration through adaptation and mitigation is available on the internet at https://www.nrs.fs.fed.us/atlas/tree/tree_atlas.html.

Additionally, the Chequamegon-Nicolet National Forest has produced several internal reports and contributed to multiple publications that evaluate the relationship between carbon and forest management (Quinn 2009, Peckham et al. 2013; Birdsey et al. 2014). The Chequamegon-Nicolet National Forest is very fortunate to have a good understanding of the Forest's biological and industrial carbon budget based on recent and locally based research (Fassnacht and Gower 1997, Cook et al. 2004, Desai et al. 2005, Noormets et al. 2007; Birdsey et al. 2014; Ryan et al. 2010; Swanston et al. 2011). Some of the most significant studies of forest carbon budgets have occurred on the Chequamegon-Nicolet National Forest. Birdsey et al. (2014) published a report summarizing the past and prospective carbon stocks on the Chequamegon-Nicolet National Forest and across Northern Wisconsin. White et al. (2005) and Gower and Ahl (2006) calculated the industrial carbon cycle, including all the emissions associated with timber harvest, transportation and processing and concluded that even with current harvest levels, the Chequamegon-Nicolet National Forest is acting as an overall carbon sink. This means that more carbon (or carbon dioxide) is stored than is emitted on the Chequamegon-Nicolet National Forest. Additionally, other studies show that we can expect a net reduction in greenhouse gas emissions from substituting timber products for other materials (for example, cement, steel, and heating fuel that consume more fossil fuels to produce than wood).

In short, the proposed vegetation management actions are not expected to result in a net increase in greenhouse gas emissions, but when substitution effects are anticipated, they could result in a small offset of other global carbon emissions. Therefore, *all effects would be minimal*.

Further, two key strategies for addressing climate change include "adaptation" and "mitigation". Adaptation relates to the ability of a system to adjust to climate change, be resistant and resilient to

potential damages, and to take advantage of opportunities or cope with consequences. Adaptation can be addressed at the project level. Mitigation includes strategies to reduce greenhouse gas sources and emissions and enhance greenhouse gas sinks. There are, however, management activities that can affect the carbon balance of the Chequamegon-Nicolet National Forest. Mitigation is best addressed at a much larger scale than the project level for two reasons. The first reason is because project level effects (positive or negative) on the global concentration of carbon dioxide or other greenhouse gases are very difficult to measure at this scale.

The second reason is the boundaries of analysis of mitigation measures extend well beyond the Chequamegon-Nicolet National Forest. Substitution of wood products for fossil-fuel-intensive materials and replacement of woody biofuels for fossil fuels are just two examples. A full analysis of greenhouse gas mitigation effects of these activities would be complex and broad and would minimally inform the Responsible Official's decision that needs to be made for the Fourmile project. A mitigation assessment, including analysis of many different management scenarios, is currently underway by Forest staff and scientists from the Forest Service's Northern Research Station and the University of Wisconsin. The analysis will include the entire Northwoods of Wisconsin. This work will help us better quantify the mitigation gains and/or losses of a variety of measures and management actions for future projects.

Adaptation strategies were utilized in the Fourmile project and are designed to promote resistance to extreme weather and insect and disease outbreaks by increasing stand diversity in terms of species, structure, and tree ages; and increasing stand growth and vigor by providing space for trees to grow. Another adaptation strategy is the reduction of hazardous fuels in the wildland-urban interface. This is a proactive approach to protecting forests from the potential effects of catastrophic wildfire. Adaptation actions are also addressed through project design features, Forest Plan standards and guidelines, and other ongoing activities on the Eagle River-Florence District, including the protection and enhancement of habitat of threatened and endangered species and Regional Forester sensitive species, non-native invasive species control, and restoration of native plant communities.

3.13 Cultural Resources

This section of the EA (3.13 Cultural Resources) summarizes the steps that have been taken to ensure that significant/eligible, or potentially significant/potentially eligible cultural resources within the broader boundaries of the Fourmile Vegetation Management project area would be protected. The following summarizes efforts to identify cultural resources within the project's overall boundary and outlines steps to ensure that significant resources are protected. It further presents guidance regarding how cultural resources would be treated, should any be inadvertently discovered through project-related implementation activities.

The process of locating and protecting cultural resources in areas of proposed federal undertakings was completed in accordance with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470(f)), as amended, and implementing direction provided in 36 CFR 800, Protection of Historic Properties. This direction is further documented in the Chequamegon-Nicolet National Forest 2004 Land and Resource Management Plan.

Surveys along with project activities and mitigation measure for protection of heritage/cultural sites have been submitted to the Wisconsin State Historic Preservation Officer (SHPO) and the Tribal Heritage Preservation Officer (THPO) for review and comment. Reports with the completion of surveys, the development of protective measures for each recorded cultural resource, stipulations developed for the treatment of unanticipated discoveries, and eventual completion of required and appropriate consultation efforts, the Forest Service would effectively have satisfied all provisions of 36 CFR 800, Protection of Historic Properties. With a finding of no potential to cause effect, the Section 106 process would be effectively fulfilled per 36 CFR 800.3(a)(1).

Unanticipated Discoveries

In the event that previously unreported cultural resources are encountered during project-related activities, all work must immediately cease within 30 meters (100 feet) and Forest archaeological staff shall be notified. Once Forest archaeological staff have documented the discovery and evaluated its eligibility for the National Register of Historic Places (NRHP) in consultation with the Forest Archaeologist, SHPO, and Tribes, as appropriate, work may resume in this area.

If human remains are encountered during ground-disturbing activities, all work must immediately cease within 30 meters (100 feet) of the discovery. Forest archaeological staff, SHPO, and appropriate Tribes shall be notified of the discovery within 24 hours. All discoveries would be treated in accordance with NAGPRA (Public Law 101-601; 25 U.S.C. 3001-3013), and work shall not resume in this area without authorization from the Forest Archaeologist.

3.14 Economics

The Chequamegon-Nicolet National Forest provides direct and indirect economic benefits to Wisconsin and surrounding states. Economic benefits contributed to the region around national forest lands include market and non-market opportunities such as harvesting timber, participating in tourism and wilderness activities, collecting balsam boughs, and fishing. Wisconsin timber only contributes \$6.8 billion to the economy with it being one of the top 10 industries by employment (Wisconsin Department of Natural Resources, 2016). About 60,480 jobs in Wisconsin are within a Forestry related field (Ibid).

The Fourmile project area is a small portion of the Chequamegon-Nicolet National Forest, which is part of a large economic impact area. This analysis tiers to the social and economic analysis for the Chequamegon-Nicolet National Forest found in the Forest Plan Environmental Impact Statement (EIS) pages 3-306 through 3-364. The Forest Plan EIS addresses the economic sustainability of the local communities including employment, income, and present net value. It takes into consideration recreation and tourism, commercial wood products and sustainable timberlands.

Forest Plan decisions contribute to economic sustainability by providing for a range of uses, values, products, and services. The Forest Plan direction also balances these economic benefits with ecological sustainability. The mix of uses, values, products and services provided by the Forest Plan are measured by representative values indicated by employment, income, industry sectors, portion of economic cumulative impacts, Net Present Value (NPV), and community resilience. These indicators were measured within the defined economic impact area (USDA Forest Service, 2004, pp. 3-306 through 3-364).

The Fourmile project area is within Forest County, Oneida County, and Vilas County, Wisconsin. Social and economic information for the counties are provided below to put the project in context. A vegetation management project the size of the Fourmile Project is unlikely to have large, measurable economic effects on the surrounding communities. Therefore, it is appropriate to turn to the Forest Plan analysis for effects to tourism and the timber industry on a larger scale. A more appropriate analysis for the scale of this project is to do a financial efficiency analysis which compares the tangible costs and benefits of the Fourmile project.

The cost of Alternative 2 exceeds the timber revenues of the project by over \$775,000. The estimated costs associated with reforestation activities, such as converting a forest type over to longer-lived species, increasing diversity within a stand through planting and preparing the site for planting, are high. Planting may not be needed to adequately regenerate a harvested stand; however, planting and preparation would be needed to ensure success in attaining the desired tree species composition. The biggest costs outlined in Table 4 is the implementation costs, projected to be around \$2,902,000. It is difficult to reduce these costs due to the rigorous law, regulation, and policy that are followed, ensuring the proper sale of federal

resources like timber. The next biggest costs are reforestation (~\$811,000) and road activities (~\$632,000).

Total economic impacts would be low for this alternative because the forestry industry consists of a small portion of the local economy in Forest, Vilas, and Oneida Counties (USDA Forest Service, 2004, pp. 3-324 through 3-325). However, this project would supply around \$586,000 towards state and local government's Payment in Lieu of Tax funds from just the timber sales. Economic costs and benefits are important considerations but are not the only or even primary considerations in an environmental analysis. There are many non-market or amenity values associated with the alternatives such as the values of large patches of mature forest and large patches of young forest that will grow into mature patches. Other non-market values include enhancements to habitat conditions, vegetation, riparian areas, and surrounding scenery. There are many benefits and some costs not quantified in this analysis that would tip the scales in either direction.

In conclusion, Alternative 2 would produce roughly \$3,904,000 with roughly \$586,000 returning to local governments to be used in Lieu of paying taxes. Alternative 1 would forego the cost of the projects but would also forgo any benefits to local economy and governments.

Further in-depth information can be found in the Economic Specialist report in the project record.

3.15 Cumulative Effects Summary

Table EA-8. General summary of cumulative effects for each resource analyzed in the Fourmile Project area for the Eagle River-Florence District.

Resource	Effect
Air Quality	Minimal and/or No Anticipated Impacts
Aquatics/Water Resources	Minimal and/or No Anticipated Impacts
Botany (BE)	Variable, please see above section and/or resource report
Climate Change	Minimal and/or No Anticipated Impacts
Economics	Positive
Fuels	Positive
Heritage/Cultural Resources*	Minimal and/or No Anticipated Impacts
Invasives (NNIP)	Minimal and/or No Anticipated Impacts
Recreation/Visuals	Minimal and/or No Anticipated Impacts
Silviculture/Vegetation	Positive
Soils	Minimal and/or No Anticipated Impacts
Transportation*	Variable, please see above section and/or resource report
Wildlife (BE)	Variable, please see above section and/or resource report

*Primarily assessed for direct impacts due to either avoidance measures or indirect/cumulative impacts incorporated into other resource reports' analyses.

4.0 4 – Consultation and Coordination

Chequamegon-Nicolet National Forest Interdisciplinary Team Members and/or Contributors

Dan Reynolds Title: Timber Management Assistant Contribution: Timber & Transportation Input	Tim Ketelboeter Title: Engineering Technician Contribution: Transportation/Travel Analysis
Adam Felts Title: NEPA Coordinator Contribution: ID Team Leader, Writer/Editor	Scott Anderson Title: Wildlife Biologist Contribution: RFSS Wildlife BE
Scott Linn Title: Fire Management Officer Contribution: Fuels Specialist Report	Justin Bournoville Title: District Plant Ecologist Contribution: RFSS Plant BE & NNIS Report
Mark Farina Title: Forest Soil Scientist Contribution: Soils Specialist Report	Sara Sommer Title: Watershed Specialist Contribution: Aquatic Resource Report
Katie Theisen Title: Silviculturist Contribution: Vegetation Resource Report	Chad Kirschbaum Title: Eagle River-Florence District Ranger Contribution: Responsible Official
Evan Miller Title: Assistant Ranger of Recreations Contribution: Visual/Recreation Resource Report	Jerry VanCleve Title: Forest Silviculturist Contribution: Silviculture Report Review
Kim Potaracke Title: Archeological Technician Contribution: Heritage Survey Coordination	Christopher Houlette Title: Assistant Forest Archaeologist Contribution: Heritage Report
Daniel Eklund Title: Forest Wildlife Biologist Contribution: BE Review	Linda Parker Title: Forest Ecologist Contribution: BE Review, Climate Effects
Deb Veen Title: GIS Specialist Contribution: Maps, GIS Analyses	Kristine Vollmer Title: Forest Environment Coordinator Contribution: ID Team Leader, NEPA Editor
Doug Chaltry Title: Regional Planner Contribution: 40 Acre Deviation Request Review	Karolyn Lock Title: NEPA Planner Contribution: ID Team Leader, Writer/Editor
Robert Lueckel Title: Acting Regional Forester Contribution: 40 Acre Deviation Request	Kolleen Kralick Title: Heritage Program Manager Contribution: State Heritage and Tribal Consultation, Heritage Report
Jennifer Maziasz Title: Recreation Program Manager Contribution: NEPA Reviewer, Writer/Editor	

4.1.1 Federal, State, and Local Agencies; Individual and Organization Contributors and Commenters

The mailing list of individuals, organizations, and agencies the Scoping and the 30-Day Comment period information packets for this project was sent to is in the project record. See EA Appendix C for a list of individuals, organizations, and agencies who commented during the 30-Day Comment period. Additionally, the USFWS was consulted on the NLEB.

4.1.2 Tribal Governments Consulted

The following tribes and Native American agencies were contacted during the development of the EA for the Fourmile project:

- Fond du Lac Band of Lake Superior Chippewa Indians
- Forest County Potawatomi Community
- Great Lakes Indian Fish and Wildlife Commission
- Keweenaw Bay Indian Community
- Lac du Flambeau Band of Lake Superior Chippewa Indians
- Lac Vieux Desert Band of Lake Superior Chippewa Indians
- Mole Lake Band of Lake Superior Chippewa Indians/ Sokaogon Chippewa Community (Mole Lake)
- Mille Lacs Band of Chippewa Indians